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THE SEBACEOUS GLANDS

THEIR HISTOPATHOLOGY AND RÔLE IN DISEASES OF THE SKIN *

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SAN FRANCISCO

The discovery of the sebaceous glands has been attributed to Gurlt.[1] As early as 1846, Horner [2] commented on the fact that "the sebaceous organs furnish the oily exhalations which lubricate the surface of the skin, give linen when worn a long time a greasy appearance and cause the water in which we bathe to assemble in drops on the surface of the body rather than to wet it uniformly. This humour produces a rancid, disagreeable smell from the surface of such persons as do not resort to ablutions of the whole skin from time to time."

Since then, Erasmus Wilson [3] and innumerable others have added to knowledge on the subject, but many gaps still remain unfilled.

EMBRYOLOGY

The sebaceous glands develop from the epidermis, but some difference in their evolution exists, depending on whether they are derived directly from the tegmentary layer or secondarily from the germinal layer of the hair follicle.

As soon as the hair follicle begins to show a papilla in its stage of development, the rudiment of the sebaceous gland appears on its inferior surface. This rudiment or bud is grafted on the germinal layer of the follicle and soon increases in length; it then divides to form a proximal and a distal extremity, the former of which remains narrow while the latter grows out into an ampulla and becomes surrounded by connective tissue (Poirier and Charpy [4]).

If one studies closely the structural modifications of the germ of the sebaceous gland, it appears, first of all, that this germ has in itself elements similar to those of the germ of the hair follicle. Later, however, the cells of the sebaceous glands become differentiated. The

* Submitted for publication, March 3, 1931.

1. Gurlt, quoted by Poirier, Paul; and Charpy, A.: Traité d'anatomie humaine, ed. 3, Paris, Masson & Cie, 1912, vol. 2.

2. Horner, W. E.: Special Anatomy and Histology, ed. 7, Philadelphia, Lea & Blanchard, 1846, p. 376.

3. Wilson, Erasmus: Diseases of the Skin, ed. 2, Philadelphia, P. Blakiston's Son & Company, 1914, p. 48.

4. Poirier, Paul; and Charpy, A.: Traité d'anatomie humaine, ed. 3, Paris, Masson & Cie, 1912, vol. 2, p. 133.

peripheral cells are small and granular, and in the course of their evolution they form new cells by mitosis. These new cells replace the central cells destroyed in the process of secretion. The central cells are voluminous with sharp outlines, and are spherical or oval, with protoplasm containing many vacuoles filled with drops of fat. These cells readily stain black with osmic acid. The axial column of sebaceous cells, which is a part of the germ of the gland, grows into the axis of the follicle and into the nearby embryonic ectoderm, preparing the way for the eruption of the hair long before it is ready to come through.

In the fetus of 7 months, the gland is represented by a basal membrane, several rows of peripheral cells and the central elements, which,

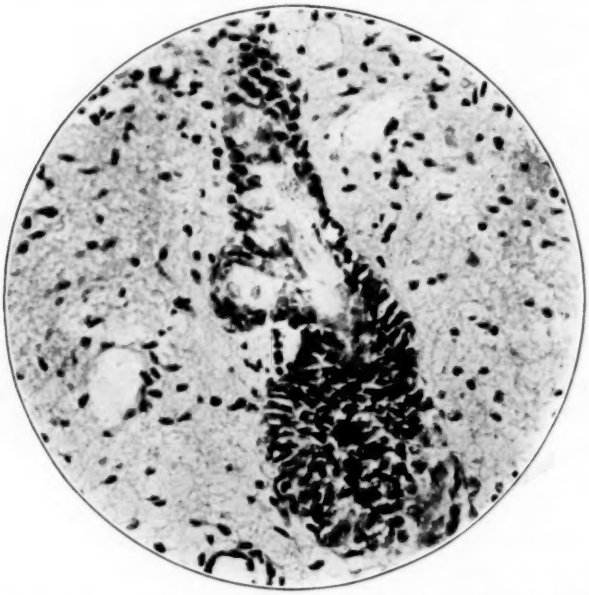

Fig. 1.—Section from a 5 months fetus showing the sebaceous gland developing from the inferior surface of the follicle. Hematoxylin-eosin stain; × 250.

having been infiltrated by fat, show the characteristic evolutionary changes seen in sebaceous tissue.

The sebaceous glands appear at a definite stage during the evolution of the hair. According to Kölliker,[1] the germs of the sebaceous glands appear on the head at 4½ months (fetal life). It is only at the fifth month that they appear on the rest of the body. This latter comment is subject to differences of opinion.

The sebaceous secretion, together with the cast-off epidermal cells, is collected on the surface of the body during the last months of intrauterine life and forms a layer of varying thickness, termed the vernix caseosa or smegma embryonum.

The sebaceous glands of the labia minora are supposed to appear as late as between the second and the fourth month of extra-uterine life.

The sebaceous glands opening directly on the surface of the skin, such as those of the areola and the labia minora, appear later than those connected with a hair. Their evolution, however, is approximately the same, except that they are developed directly from the basal epidermal layer. According to Ribbert,[5] new sebaceous glands can appear in the adult, and this fact is responsible for the development of many dermatoses in late adult life.

FORM AND DISTRIBUTION

Sebaceous glands are unequally scattered over the surface of the skin. The palms and the plantar surfaces of the feet are supposed to be free. Their position within the corium is subject to variation, but they are generally situated on the oblique side of the hair follicle in the angle between it and the arrector pili muscle.

The total volume of the sebaceous glands can be represented by a mass, which, according to Robin,[1] is about the size of a fist. Taken individually, the sebaceous glands vary greatly in size. When the skin is thin, they can form a mass beneath the outer layer and become visible to the naked eye. The most voluminous sebaceous glands are the meibomian glands of the lids. The sebaceous glands are less numerous than the sweat glands, although in some areas they are equally frequent.

Sebaceous glands are simple glands with acini, and their form varies with their volume. All have a secretory segment and an excretory duct. The secretory segment may be a simple ovoid or bilobed pouch. Its total length is from 600 to 800 microns; its width about one-half that. The number of acini varies greatly (from two to twenty), and they converge, one toward the other, to unite at an acute angle. Occasionally, they may converge in series, forming lobules which in turn form lobes. Thus, sebaceous glands are divided into two types according to the complexity of their shape. They are described as compound and simple. In the latter, the acinus is a direct evagination of the excretory duct; in the former, the gland is branched (alveolar glands). Bauer [6] differentiates tubo-alveolar and alveolar glands. In the first, the acini extend only in one direction, and in the second, they grow in all directions, for nothing is opposed to their development.

The diameter of the compound glands is at least 500 microns and up to 2 mm. Each acinus is from 200 to 400 microns long. A few of

5. Ribbert: Ueber Neubildung von Talgdrüsen, Arch. f. Entwcklngsmechn. d. Organ. **17**:578, 1903.

6. Bauer: Morphol. Arb., 1894, vol. 4; quoted by Poirier and Charpy (footnote 4).

the glands occur on the neck, the trunk and the limbs, but they are found in large numbers on the head, the breasts and the female genital organs.

The excretory duct may be altogether lacking; if so, it is called sessile. Ordinarily the canal is short, cylindric and funnel-shaped near the surface. Its diameter varies between 80 and 150 microns and it opens either directly on the surface or into the hair follicle.

CLASSIFICATION OF THE SEBACEOUS GLANDS

The sebaceous glands may be classified as: (1) those opening into the hair follicle; (2) those opening directly on the surface of the skin,

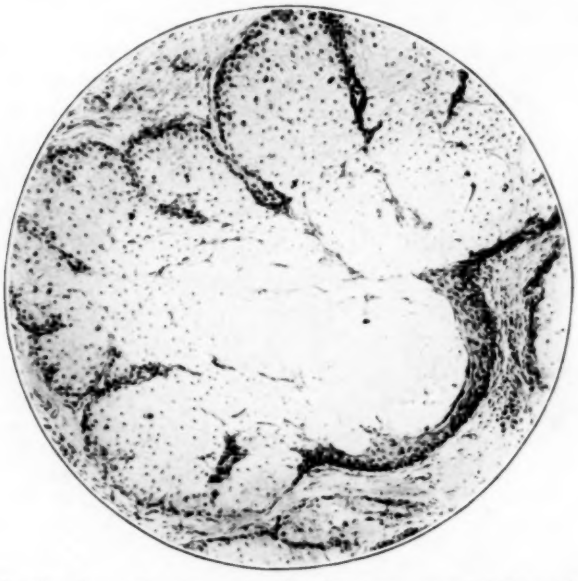

Fig. 2.—Section from the nose, showing how the accumulation of sebum produces a dilatation of the excretory duct. Hematoxylin-eosin stain; × 100.

forming a passage for a rudimentary hair, and (3) those opening on the surface of the skin, having no connection with the hair.

(1) The sebaceous glands opening within the cavity of the hair follicle comprise nine tenths of the sebaceous glands. Their main characteristic is that they are connected with a hair of variable size and have a gland opening within the cavity of the follicle.

Most of the rudimentary hairs and all of the well developed hairs have one and generally two sebaceous glands attached to them. These glands may be either of the same or of unequal size. Their ducts open obliquely into the cavity of the follicle in the same horizontal plane but on opposite sides of the follicle. When there are three or more glands, they may open at the same height or at different heights.

Generally, the size of the glands is inversely proportional to the diameter of the hair to which they are attached. They are quite large for the small hairs of the eyelids, the pinna of the ear and those of the beard. An exception exists in that the glands of the hair of the beard are larger than the glands found in the scalp, even though the diameter of the hair of the beard is greater.

When glands opening on the surface of the skin occur side by side with those opening into the hair follicle, they are larger and more deeply situated than the latter, which are small and superficial.

(2) The glands opening on the surface of the skin, forming a passage for small hairs, attain the greatest volume and the most complicated forms. They are found on the face, limbs, abdomen, upper part of the trunk and areola. The largest of these are found on the nose, especially the labionasal fold. They open on the surface of the skin, and have one and sometimes two small hairs attached to them. The follicle, which is either straight or curved in the shape of an arc, often occupies the space between two sebaceous lobes and runs the entire length of the canal, coming out on the surface of the skin through the opening of the duct of the sebaceous gland. These glands may be considered as transitional between the other two types, having characteristics similar to each.

(3) The glands that are independent of the hair are few and are characterized by the fact that they open directly on the surface of the skin. They are normally found on the labia minora, the mucous borders of the lips and the nipples. The glands found on the penis and the inner surface of the prepuce (tysonian glands), unconnected with hair and opening on the free surface, vary in development and constancy, being sparse in some instances and numerous in others.

Sebaceous glands are visible at times in the mucous membranes of the mouth, where they usually appear in groups, as small, yellowish, pinhead-sized structures, superficially located. To the uninitiated observer, their presence is often disquieting, and the custom of regarding them as part of a disease process deserves criticism.

The skin lining the external auditory meatus contains ceruminous glands which are of the branched tubulo-alveolar type and in many respects resemble large sweat glands.

Stöhr and Lewis [7] said:

> Their ducts are lined with stratified epithelium. The coils consists of a single layer of secretory cells, generally cuboidal, surrounded by smooth muscle fibers and a well defined basement membrane. They differ from sweat glands in that their coils have a very large lumen, especially in the adult; and in that their gland cells often have a distinct cuticular border and contain many pigment and

7. Stöhr, P., and Lewis, F. T.: A Textbook of Histology, ed. 2, Philadelphia, P. Blakiston's Son & Company, 1913, p. 481.

fat granules. Their narrow ducts, in adults, end on the surface of the skin close beside the hair sheaths, in children, they empty into the sheaths. It has not been shown that the ceruminous glands are more directly concerned in the production of cerumen than sebaceous glands. The cerumen obviously is an oily rather than a watery secretion and it contains fatty cells and pigment.

HISTOLOGY

The histologic study of the sebaceous gland consists in the study of the acinus and the excretory canal, which form the two parts of the gland.

Acinus.—Each acinus is surrounded by a transparent basal membrane, from 2 to 3 microns in thickness. To this membrane, the deeper layers of the sebaceous cells are attached, and it acts as a limiting structure.

The epithelium of the sebaceous glands is stratified. Its evolution is similar to that of the skin and proceeds from the basal membrane to the excretory canal; that is, in the superimposed layers of the gland cells, one finds zones of cells with definite characteristics.

The first or basal layer is found on the basilar membrane and is so called because of its position. It is formed of cylindric and columnar cells of variable shapes but usually flat, resembling those of the rete and said to be connected with one another by protoplasmic bridges. They divide by karyokinesis. When they are about from 15 to 20 microns in size, they begin to elaborate fat.

The layers of cells above the basal layer become more differentiated the farther they lie from the basal membrane. These cells appear as irregular polyhedrons, containing one and sometimes a double central nucleus. Their protoplasm contains refractive granules, which color a brick red when fixed in osmic acid and stained with eosin. These granules soon take on the character of fat and reduce osmic acid. Later they increase in size and number, and the sebaceous cell becomes more voluminous.

Finally, the sebaceous cell becomes a globular mass with a central nucleus, which is compressed by the products of secretion and takes on an irregular outline, resembling somewhat a small rod or star. The chromatin, which originally was basophilic, becomes diffusely colored and acidophilic. The protoplasm appears as a delicate reticulum the meshes of which are filled with fat. This reticulum or spongioplasm becomes more resistant to acids, alkalis and digestive ferments than the spongioplasm of ordinary prickle cells, and in this, as well as in the fact that they contain granules of fat, the cells of the gland present a close analogy to horn cells, although they have no keratin.

The sebaceous cell next severs its connection with the other cells; the nucleus, which is broken up, then disappears, and the fragments of

the cell mixed with the fatty droplets either flow into the follicular cavity or are discharged directly onto the surface of the skin as sebum.

"The sebaceous cell represents an epidermic cell which has become loaded with fat and the evolution of which ends in its destruction (glands of this type are called holocrinous) and the freeing of the material formed in its protoplasm, so that the sebum, a product of the secretion, is made up not only of fatty material but also of the débris of the cell which elaborated this fatty substance" (Ranvier [1]).

At present, the so-called smegma found about the glans penis and the inner side of the prepuce is not believed to be the product of the sebaceous glands, but is thought to be due chiefly to an exfoliation of the

Fig. 3.—Section from a sebaceous gland nevus, showing numerous nevus cells. Hematoxylin-eosin stain; × 80.

horny layer of the epidermis. It is not improbable, however, that both may be factors in its production.

Schmidt [1] found that the contents of a sebaceous cyst had the following chemical composition: water, 31.7 per cent; epithelium and protein matter, 61.75 per cent; fat, 4.16 per cent; butyric, valeric and caproic acids, 1.21 per cent, and ash, 1.18 per cent.

Some cells of the acinus do not undergo sebaceous evolution but form strands that hold together groups of sebaceous cells. These strands are formed of cells that assume the characteristics of the cutaneous ectoderm; they have uniting fibers between them, and undergo the process of keratinization as they near the center of the gland.

They are first basal cells and then malpighian cells; they then become filled with eleidin and later become keratinized, only to be dissociated like the normal cells of the epidermis.

The Excretory Canal.—This canal is subject to some variation, but as a rule it is quite short. If it belongs to a gland that is attached to a hair follicle, it has (1) a basal layer continuous with that of the gland and the vitreous membrane of the hair, (2) stratified epithelial cells which are a continuation of the epithelial hair sheath and (3) a corneal layer. The sebaceous secretion is poured into the vitreous space between the sheath and the hair. When the excretory canal opens directly onto the surface, its basal layer is continuous with that of the epidermis. It is covered with epithelial cells of the malpighian type and has a stratum corneum continuous with that of the skin.

Not infrequently a parasitic mite, *Acarus* or *Demodex follicularum*, generally considered to be harmless, is found in the sebaceous gland, especially the duct, with its head toward the gland.

FACTORS INFLUENCING THE SEBACEOUS GLANDS

Connective tissue surrounds the base of the gland and its excretory canal. The elastic fibers of the corium extend to and envelop the sebaceous gland like a net. This net is very strong over the excretory canal and less strong around the gland, being especially weak around the individual acini.

Blood vessels surround the glands like a loose net and anastomose with those of the adjacent cutis. The lymph vessels, like the capillaries, form a meshlike network which surrounds the hair follicle as well as the sebaceous gland attached to it (Krause [8]).

For a long time it was thought that there were no nerves capable of causing the glands to pass from a state of rest to one of activity. It was thought that the sebaceous secretion was a continuous process and resulted from an evolution of the epithelial cells (*vis a tergo*).

However, Arloing [9] found that section of the sympathetic nerve to the ear in the donkey caused a hypersecretion of the sebaceous glands. This hypersecretion begins from eighteen to twenty days after section of the nerve, lasts for three days and later disappears. It seems to be due to the excitation of the secretory nerves.

In the eyelids, Pensa [10] saw nerve fibrils leaving the perivascular plexus and the subepithelial plexus. These fibrils surround the surface

8. Krause, Wilhelm: Allgemeine und microscopische Anatomie, Hannover, Hahn, 1876, p. 112.

9. Arloing, S.: Des rapports fonctionnels du cordon sympathique cervical avec l'épiderme et les glandes, J. de méd. vét. et zootech., Lyon **15**:617, 1890.

10. Pensa, A.: Ricerche anatomiche sui nervi della congiuntiva palpebrale delle ciglia e delle ghiandole di Meibomio, Boll. d. Soc. med.-chir. di Pavia, 1898, p. 111.

of the gland of Meibomius with a network. From this network, other fibrils begin which go through the membrane proper, course between the cells and end on the cells in minute enlargements which vary in size and direction.

GLANDULAR SECRETION

Secretion of the Sebaceous Glands.—The normal sebaceous secretion consists of a liquid and a solid—the horny, changed membranes of the glandular cells after the fat has left them. Cholesterol, one of the constituents of sebum, is thought by some to be a product of cellular degeneration, and its chemistry is that of the secondary alcohols.

It has been found that the daily amount of sebum excreted on the scalp is equal to that excreted by the entire body.

The sebaceous glands are active during the latter months of pregnancy, at the time of puberty and up to middle life, after which atrophy sets in. "Senile atrophy of the skin plays a large part in hypo-activity of the sebaceous glands" (Simpson [11]).

It was noted by Kuznitzky [12] that a greater amount of fat was excreted by the skin of a person on a diet of carbohydrates than was excreted when the diet was largely fatty. The daily physiologic elimination of fat found on the skin varied between 1 and 2 Gm., being fairly constant in the adult but somewhat diminished in children and during cold weather. The differences in the amount of secretion under the influence of carbohydrates on the one hand and of fat on the other are as yet extremely difficult, if not impossible, to explain.

By experimentation, Kuznitzky [12] also found that during the ingestion of bromides, there was a marked decrease in the elimination of fat, a decrease of more than one-half the daily amount present before the intake and a number of days after the ingestion of bromides.

A chemical analysis of such sebaceous material eliminated during the experimental period revealed only a faint trace of bromine.

Many persons have pathologic seborrhea; when this exists, the various types of eruptions to which the epithet "seborrheic" is attached are apt to make their appearance. It is believed that in this condition, one is dealing not merely with an increased secretion of sebum and sweat, but with an alteration in the composition, and it is this as yet not accurately determined change of composition, rather than the increase in the amount secreted, that renders such skin liable to active invasion with micro-organisms that normal skin is able to resist. It seems plausible to believe that this alteration of secretion is influ-

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11. Simpson, in discussion on Varney, H. R.: Deranged Sebaceous Secretion as an Etiologic Factor in Diseases of the Skin, J. A. M. A. **73**:1580 (Nov. 22) 1919.

12. Kuznitzky: Arch. f. Dermat. u. Syph. **114**:691, 1913.

enced by the elimination of certain by-products or chemicals through the medium of the sebaceous glands. Riecke [13] stated that certain substances, such as bromine and iodine, that are contained in the blood stream are eliminated in this manner. In favor of this view is the fact that, although in cases of seborrheic dermatitis, there is usually an obvious hypersecretion of the sebaceous glands, this is not always so.

The lack of oil is a far more common deviation than the excess. At the adolescent age when all glandular activities are greatly increased, the activity of the sebaceous function predisposes to a few dermatoses, such as the seborrheas and some forms of acne. This stage of hypersecretion of oil is of short duration, and it is more amenable to treatment and not nearly so troublesome or common an etiologic factor as the insufficient amount of oil.

Protective Function.—"In the normal outer covering of the body, protected from all external irritants, by proper cleanliness and sufficient sebaceous material, are embodied the essentials for a comfortable state of the skin. It is thus able to ward off many skin diseases. Daily improper care of the skin is responsible for a large percentage of skin diseases" (Varney [14]).

A general lack of oil produces a constant wasting of bodily heat, resulting in the patient's feeling every sudden change of temperature which the normal oil prevents.

One readily forgets the function of oil in the human skin. When sufficient oil is present the skin is flexible, whereas a deficiency produces a harsh, dry skin, the epithelium of which often cracks, exposing the sensory nerve endings and causing itching and burning. Infection may enter through these fissures, and a weeping dermatitis may develop. The pyogenic infections and their resulting dermatoses are the most frequent. The pruritus of the legs that develops during the first cold, windy days of fall in frequent bathers is the most common illustration (Varney [14]). These patients cannot wear wool or coarse fabrics because of the uncomfortable condition resulting from the roughened, dry epithelial layers of the skin, for the filaments of the wool constantly pull on the outer layer of roughened cells.

THE RÔLE OF THE SEBACEOUS GLANDS IN THE DERMATOSES

Varney [14] expressed the belief that in every recognized disease of the skin there is some derangement of the sebaceous function. Sutton [15]

13. Riecke, E.: Lehrbuch der Haut- und Geschlechtskrankheiten, ed. 7, Jena, Gustav Fischer, 1923, p. 37.

14. Varney, H. R.: Deranged Sebaceous Secretion as an Etiologic Factor in Diseases of the Skin, J. A. M. A. **73**:1580 (Nov. 22) 1919.

15. Sutton, R. L.: The Symptomatology and Treatment of Seborrhoeic Keratoses, J. A. M. A. **64**:403 (Jan. 30) 1915.

agreed that an anomaly of secretion of the sebaceous glands is probably the essential and primary trouble in both seborrheic dermatitis and seborrheic keratosis.

According to Barker,[16] the chief underlying cause of the seborrheic state is the faulty digestion and metabolism of carbohydrates and, to a lesser extent perhaps, of fat, whereby an excess of organic and acid by-products is produced. These are apparently secreted through the sebaceous and sweat glands, causing not only an excessive secretion but also, of course, an alteration in the composition of the sebum and the sweat. It is probable, too, that these acid products are taken up by the cells, not only of the glands but also of the whole epidermis and mucous membranes, and are combined with or dissolved in the fatty substances in which these cells are so rich.

Seborrhea.—Strictly speaking the term "seborrhea" should be applied only to the oily condition of the skin due to increased secretion of sebum. Seborrhagia, steatorrhea, flux sebacea (Rayer) and seborrha oleosa (Hebra) are the older names for the condition.[17] The disease affects chiefly the scalp, face, central areas of the body, back, chest and flexures, and is now generally accepted as due to an increased secretion of the sebaceous glands.

Some observers believe that the sweat glands are concerned in the production of oil, and, as a matter of fact, hyperhidrosis often occurs with seborrhea.

Barber [18] suggested the term "status seborrhoeicus" for the condition in persons who have a tendency toward infections and inflammations of a seborrheic nature; it is possible that this state is inherited. I often inform my patients that they have a seborrheic type of skin.

There is no doubt that heredity plays an important rôle in seborrhea. Sebaceous secretion is greater in the black than in the white races, and greater, on the whole, among southern Europeans than among those of the north. These variations probably depend partly on different climatic conditions, but there is no doubt that excessive oiliness, like excessive dryness of the skin, may be a familial and racial characteristic. One certainly meets with seborrheic families. Moreover, dark complexioned persons usually have larger and more actively secreting sebaceous glands than blondes (Barber [19]). The Jewish race is noted for its oily skin, and, as one would expect, Jewish people are especially subject to acne and seborrhea.

16. Barker, L. F.: Endocrinology and Metabolism, New York, D. Appleton & Company, 1922, vol. 2, p. 456.

17. Low, R. C.: The Etiology of Seborrhoea and Seborrhoeic Dermatitis, Brit. M. J. **2**:752, 1922.

18. Barber, H. W.: The Etiology and Treatment of Seborrhoeic Eruptions, Brit. M. J. **2**:245, 1918.

19. Barber, H. W.: The Seborrhoeic State, Brit. M. J. **2**:754, 1922.

An excess of sugar in the diet may by its constipating effect lead to increased fermentation in the bowel, and the products of fermentation may lead to irritation of the sebaceous glands. In accepting this statement, it is also logical to assume that other toxins may produce the same effect and cause seborrhea. This is apt to be true in the intestinal toxemias and constipation. By dilating the vessels of the skin, alcohol may indirectly lead to stimulation of the sebaceous glands.

When rich milk is taken in large quantities,[17] the sebaceous glands secrete fats that are peculiarly liable to bacterial infection; hence an excess of milk fats leads to infection of all kinds in the sebaceous glands. Subcutaneous deposits of fat in well nourished persons also offer a source of supply to the glands. Strenuous exercise, especially in heated atmospheres, increases the circulation of the skin and causes sweating and an increased output of oil by the glands.

In cases of anemia, the skin is often oily. Owing to the want of sufficient oxygen in the blood, anemia may lead to lowered oxidizing powers of the tissues and, therefore, to a tendency to the deposit of fat in the tissues.

While any disease of the sebaceous glands no doubt plays a more or less active rôle in the production of alopecia, a much more important factor has been brought out, which style in recent years has perhaps verified. Low [17] stated that no one has suggested that which to him is the obvious predisposing cause, namely, wearing the hair short. Alopecia is rare in women and appallingly common in men. The only difference between the way in which men and women treat their hair is that the former wear it short and the latter long. The hair was meant to be long, and the normal stimulus to its growth is the long hair hanging down the back and blowing in the wind. There is a gentle pull on the bulb of the hair by the weight of the hair which, reflexly through the nervous system, keeps the hair in tone and stimulates the circulation in the bulb. If one keeps the hair short, one removes the constant stimulus to the scalp, and seborrhea attacks the bulb of the hair and soon destroys it.

Women may have seborrhea capitis for years, but it practically never leads to the degree of alopecia seen in men.

It is a well recognized fact that all organs that are not used as they were meant to be become weak and liable to the attack of infecting agents.

INFLUENCE OF THE ENDOCRINE SYSTEM

MacKenna [20] stated that the hyperactivity of the sebaceous glands, which is a necessary antecedent to all lesions of the skin classed as seborrheic dermatitis and seborrheids, depends on some stimulation by

20. MacKenna, in discussion on Barber (footnote 19).

the endocrine secretions. It is admitted, however, that other factors than oversecretion influence this condition.

Cederkrautz,[21] who investigated the secretions from the generative organs and skin, held that nearly every tissue and organ, if not every one, has its own internal secretion.

Doege [22] asserted that the hypothetic assumption of the existence of an internal secretion of the skin is probable, and that the existence of a metabolic and biologic function is made positive by the contemplation of certain facts. For instance, not only does a close or perhaps a compensatory dependency exist between the functions of the various ductless glands, such as the thyroid, suprarenals, pituitary body and gonads, but there is evidence also of the existence of an intimate connection between the glands of internal secretion and the skin. Perhaps the most familiar examples are the appearance of myxedema with the loss of function of the thyroid gland, the dependency of certain eruptions or pigmentations of the skin on the sexual glands, pregnancy, puberty and the climacteric period and the bluish discoloration of the skin in Addison's disease, which is a disease of the suprarenal glands.

So then, from an anatomic and histologic point of view, and bearing in mind the tremendous epithelial surface of the rete malpighii, its intimate relation to the capillary circulation, its abundant nerve supply and its extensive system of lymph spaces, it would seem that other perhaps more important functions than excretion and mechanical protection might pertain to this tissue.

According to McAuliff,[23] since the development of the terminal hair occurs at the time of sexual development, it is but natural to connect the two. Friedenthal [24] believed that the waste products of the metabolic activity of the sexual glands affect the growth of the terminal hair.

Involution of the sexual glands in old age, accompanied by wrinkling of the skin and thinning of the hair, is sometimes cited as further evidence of the relation between these glands and the pilosebaceous system.

In considering the question of dermal esophylaxis, Pulay [25] pointed out that the endocrine glands, especially the gonads, have a certain influence on the skin. In children, *Microscporon audouini* is most difficult to eradicate, but this infection of the scalp disappears at puberty

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21. Cederkrautz, quoted by Ravitch, M. L.: Illinois M. J. **43**:201 (March) 1923.

22. Doege, K. W.: Wisconsin M. J. **20**:125 (June) 1921.

23. McAuliff, G. R.: Hypertrichosis, Variations in Female Secondary Sexual Characteristics, and Internal Secretions, J. A. M. A. **66**:15 (Jan. 1) 1916.

24. Friedenthal, quoted by McAuliff (footnote 23).

25. Pulay, E.: Influence of the Endocrine Glands on Skin Diseases, Therap. Halbmonatsch. **34**:302 (June 1) 1920.

without treatment. Whether the fungi are affected directly by the secretions of the gonads or indirectly by those of the sebaceous and coil glands remains to be proved.

Doege [22] commented on esophylaxis by saying that general massage exerts a constant dermal irritation and when properly carried out leaves the skin with an increased flow of active circulation. The general sanitary cleansing bath, the mud bath and the cold bath have the same dermal effect in the treatment for typhoid and other fevers, and the conspicuous part the skin plays in the profuse perspiration during the crisis in pneumonia and in the manifestations of exanthematous diseases, such as measles and scarlatina, indicates an intense participation of the skin in the pathologic processes and suggests a much greater importance of the skin and its functions than that of external protection.

The endocrine glands that most markedly affect the skin are those developed from the same embryologic layer. Foremost among these glands are the suprarenals (Hunt [26]). In Addison's disease, it is known that the hyperpigmentation of the skin and the mucous membranes is caused by the destruction of the suprarenals (Bloch and Stauffer [27]). It is also known that a casual relationship exists between insufficiency of the thyroid and myxedema of the skin, and that, especially in women, disturbances of the sexual apparatus can cause eruptions on the skin that are often closely linked with the pilosebaceous structures.

The importance of the secretion of the thyroid gland in metabolism is undoubtedly great; its absence or deficiency leads to a low level of oxidation, especially of fats, while its presence in excess causes rapid oxidation. Of course, there are other symptoms besides the variation in the rate of metabolism. Some of these are probably due to the secretion of the gland, some to the failure of the gland to remove from the blood stream certain substances of toxic nature, some merely to mechanical effect and some probably to concomitant infection or disease elsewhere.

In hypothyroidism, disturbances in the growth of the hair have been noted clinically, but the same observation has been made in hyperthyroidism. In myxedema, the hair of the scalp may become scanty, dry, lusterless and prematurely gray.

The possibility that the endocrine glands may have an influence on the secretion of oil of the skin must not be lost sight of. Hyperthyroidism makes the skin softer and oilier than normal, but the excessive secretion of thyroid extract may be only the result of some toxemia which is really the primary cause of the entire condition.

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26. Hunt, H. L.: The Glands of Internal Secretion: Their Relation to Skin Disease, M. Times, New York **55**:106 and 121 (May) 1927.

27. Bloch, Bruno; and Stauffer, H.: Skin Diseases of Endocrine Origin (Dyshormonal Dermatoses), Arch. Dermat. & Syph. **19**:22 (Jan.) 1929.

Cushing [28] summarized the changes that occur in hyperpituitarism thus:

> The hypertrophic alterations which occur in the skeletal coverings in hyperpituitarism particularly those of the epidermis are familiar. The external thickenings which are largely responsible for the coarse features of acromegaly include not only an increase in the size of the hair follicles but also an hypertrophy of the papillae with enlargement and activation of the secretory glands so that the skin becomes greasy and moist. Yet in hypopituitarism it has been observed that the skin except in the aged is smooth, transparent and notably free from moisture. Though the hair of the scalp may be abundant, it is otherwise on the body for the axillary and pubic hairs may be almost completely wanting or in the males may assume a feminine type of distribution. When hypopituitarism originates in adult life there is a tendency for the hair, even of the head to become thinned.

It is believed that the growth of glands is influenced by the endocrines through the acceleration of the circulation in the skin, thereby increasing the nutrition of such glands as the sebaceous. Hypertrophy may be said to be a nutritional abnormality.

The connection between the thymus and the generative organs (through their effect on the glands of the skin) is believed by some to explain the acnes and seborrheids of adolescent youth (Ravitch [30]). Others believe that acne is partly attributable to dysfunction of the gonads, as it frequently appears at puberty, at menstruation and during pregnancy.

Ewing,[31] in speaking of adenoma sebaceum, said, "In some cases the long duration, diffuse distribution, the orderly arrangement of the cell growth and the self limitation indicate a form of functional overgrowth. The fact that this disease is seen largely in the mentally defective, suggests a glandular (ductless) influence affecting the skin."

In speaking of the relation of the endocrine glands to diseases of the skin Cunningham [32] suggested that the physician who realizes that the skin is a part of the coordinated organism, responsive to the disturbances of its other elements, will approach the problem of therapeutics with a better prospect of results.

At the present time, however, the subject of the relationship of the glands of internal secretion to those of the skin is so complicated that it is difficult to formulate a satisfactory and tenable theory.

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28. Cushing, H. W.: The Pituitary Body and its Disorders, Philadelphia, J. B. Lippincott Company, 1912.

29. This reference has been eliminated.

30. Ravitch, M. L.: Illinois M. J. **43**:201 (March) 1923.

31. Ewing, James: Neoplastic Diseases, ed. 3, Philadelphia, W. B. Saunders Company, 1928, p. 500.

32. Cunningham, D. J.: Text-Book of Anatomy, ed. 4, New York, William Wood & Company, 1913, p. 862.

HYPERTROPHY OF THE SEBACEOUS GLANDS

Simple hypertrophy of the sebaceous glands appears partly as an accompaniment of other processes and partly as an independent tumor, in which case it forms isolated, slowly growing, yellowish-white, non-transparent growths, which vary in size from that of a pinhead to that of a pea and usually appear above the surface of the skin as a semisphere with or without gaping follicle mouths (Unna [33]).

The size of the normal sebaceous cells varies according to the amount of fat in them. The ultimate size is proportional to the collection of droplets of fat in the spongioplasm of the cell, but generally speaking, the largest lobules contain in their center the largest sebaceous cells. In fact, in every enlargement of the sebaceous glands, hyperplasia and hypertrophy of the epithelial cells are present. In the younger lobules, the former predominates, while in the older, the latter.

Local conditions, such as tissue pressure and the activity of the cutaneous muscles, affect the formation and growth. On the nose, for example, where the cutaneous tension and mobility are slight, the glandular lobules extend by means of new processes in all directions, press the lanugo hairs, which undergo atrophy, outward and the coils inward, and finally fill the whole skin from the hypoderm to the surface epithelium with intercommunicating spherical lobules of different sizes. If the majority of them approach the surface, the stretched skin has a transparent appearance. While the infundibula are relatively small, they are certainly larger than normal but by no means in proportion to the sebaceous glands attached to them. They contain only a little secretion in proportion to their glandular surface and, microscopically, they often appear drawn to one side or even flattened and depressed because of the enlargement of the lobules forming the glands.

In simple lobular hypertrophy, one can see whether or not a stagnation of secretion exists. When such is the case, the fatty change extends down even to the last persistent epithelial layer, but when the secretion is normally excreted, several rows of unaltered epithelium are always present in one or more parts of the lobule. In this first form of hypertrophy, the majority of the lobules show complete fatty changes, for they are filled with large, still unruptured sebaceous cells, in an inactive condition.

The circumscribed hypertrophies of the sebaceous glands appear on the skin and especially on the face either as single nodules, varying in size from that of a pinhead to that of a pea, or more rarely as multiple new formations. There is an active multiplication and globular

33. Unna, P. G.: The Histopathology of the Diseases of the Skin, trans. by Norman Walker, New York, The Macmillan Company, 1896, p. 814.

distention of the glandular acini. Infundibula are not always present, and the growth consists of numerous acini which are separated by dense, fibrous and, occasionally, vascular septums with few cells. Hair and coil glands are usually absent. The elastic tissue has undergone pressure atrophy, and few traces of it remain.

The multiple form of these circumscribed hypertrophies of the sebaceous glands leads to a characteristic growth, limited more or less to the face and neck, which was first described by Pringle,[34] and is now usually known as adenoma sebaceum. These hypertrophies consist of firm, whitish or reddish, smooth, sharply margined tumors, varying in size from that of a pinhead to that of a pea, projecting over the surface of the skin, usually grouped but rarely confluent. Many of the individual tumors show telangiectatic vessels and have smooth surfaces, although the mouths of follicles may be visible.

Such hypertrophy of the sebaceous glands may be seen in combination with lesions of an entirely different histologic structure, such as the fibromas, the angiomas and other growths of an epithelial nature that may arise from the ducts or acini. In cases in which the epithelium of the sebaceous glands produces solid bodies that grow into solid epithelial masses or epithelial cords, the term adenoma cannot be applied; one must use the word, acanthoma, which means an epithelial growth.

Steatadenoma, for example, is a benign tumor-like growth of irregular formation proceeding from the epithelium of the sebaceous glands, in the outgrowths of which fatty, but not colloidal, metamorphosis takes place (Unna [33]).

Under the multiple form must be included the hypertrophies of the senile sebaceous glands that occur on the forehead and occasionally on other parts of the face, in persons who have passed the fourth decade. Clinically, they appear as minute, yellowish or whitish, slightly translucent, more or less rounded but usually umbilicated papules. Nomland [35] apparently regarded them as due to a new growth of the sebaceous glands, but it seems reasonable to assume that hypertrophy of pre-existing glands plays a still greater rôle in their production. In considering the question of hypertrophy, one must consider hypertrophy of the individual cell as well as that of the glands.

Generally speaking, these nevi or adenomas, whether due to hypertrophy of the glands already present or to an increased number of glands, retain their normal function and structure, although there is

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34. Pringle: Brit. J. Dermat. **2**:1, 1890.

35. Nomland, Ruben: Senile Sebaceous Adenoma, Arch. Dermat. & Syph. **22**:1004 (Dec.) 1930.

some displacement of the previously existing blood vessels, coil glands, elastic fibers and collagen.

Epithelial tumors of glandular origin, which in general retain a glandlike structure, are extremely common and occur in practically every situation in which there are glands (MacCallum [36]). The tissue-like structure of the different forms of nevi of the sebaceous glands is histologically similar.

The epithelium-lined spaces may become enlarged to form cysts, and these may be partly occupied by papillary ingrowths of the same epithelium. These cysts are due to obstruction, to a dilatation of the ducts of glands or to the congenital misplacement of embryonic tissues.

Adenomas of the skin may arise from the sweat glands or from the sebaceous glands. Such tumors are rare and must be differentiated from the vesicles that result from obstruction of the ducts of the sweat glands and the so-called milia and comedones that are due to the accumulation of sebaceous material in obstructed sebaceous glands.

It is difficult to determine either histologically or clinically between the congenital and the acquired hyperplasias of the sebaceous glands. It is also impossible to differentiate microscopically between rhinophyma and hyperplasia of a sebaceous gland, although this offers no clinical difficulty (Gans [37]). This is readily understood when one recalls that in rhinophyma there is an increase of the epithelial elements with the formation of new glands. Nevus cell rests must be looked for, as they simplify the differentiation.

CONCLUSION

One is justified in believing that the importance of the rôle of the sebaceous glands in diseases of the skin is frequently overlooked.

The statement that some derangement of the function of the sebaceous glands exists in every recognized disease of the skin is worth consideration.

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36. MacCallum, W. G.: A Text-Book of Pathology, Philadelphia, W. B. Saunders Company, 1916, p. 940.

37. Gans, Oscar: Histologie der Hautkrankheiten, Berlin, Julius Springer, 1928, vol. 2, p. 258.

SUBUNGUAL EXOSTOSES *

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DETROIT

Subungual exostoses were first described by Dupuytren [1] in 1817. Although this curious disease is rather common (Williams [2] reported thirty-five cases, Kurtz,[3] forty-two and Davidson [4] five), there is no mention of the subject in most textbooks, and the medical literature contains only a few scattered references. The underlying condition is seldom suspected, unless one is familiar with the condition or has had roentgenograms made, for the lesion is a fibrous nodule and is therefore associated with dermatologic conditions. Because of the appearance of the exostoses as firm, dense tumors, together with their tendency to recur after excision, many cases have undoubtedly been diagnosed as malignant, and needless amputations have probably been performed. For these reasons this rather painful and disabling condition is worthy of review in the dermatologic literature.

The striking peculiarity of subungual exostoses is the almost complete limitation of the disease to the inner or tibial border of the terminal phalanx of the great toe. The terminal phalanges of other toes, particularly the little toe, are occasionally involved (Paget,[5] Liston [6]). Similar tumors in a few rare cases have been seen on the digits (Fontanel,[7] Hutchinson [8]). The condition is almost invariably solitary and unilateral, and it occurs with almost equal frequency on either foot.

The patient usually reports because of pain in walking. The clinical appearance of the toe varies with the stage or the duration of the disease and with the location of the tumor under the nail (anterior, middle or posterior portion). The first appearance is a pinkish growth varying in size from that of a millet seed to that of a hazelnut, projecting slightly beyond the inner free edge of the nail and pushing it upward

* Submitted for publication, Jan. 21, 1931.

1. Dupuytren, G.: On the Injuries and Diseases of Bones, translated and edited by F. le Gros Clark, in Publications of the Sydenham Society, London, 1847, vol. 20, p. 408.

2. Williams, W. R.: Subungual Exostoses, Bristol M.-Chir. J. **22**:17 (March) 1904.

3. Kurtz, A. D.: Subungual Exostoses, Surg. Gynec. Obst. **43**:488, 1926.

4. Davidson, A. J.: Subungual Exostosis, Am. J. Orth. Surg. **14**:150, 1916.

5. Paget, James: Lectures on Surgical Pathology, Philadelphia, Lindsay & Blakiston, 1854, pp. 461-462.

6. Liston, Robert: Practical Surgery, London, J. Churchill, 1837, p. 295.

7. Fontanel, S. C. C.: Essai sur l'exostose sous-unguéale de la main, Paris, 1877, no. 441.

8. Hutchinson, Jonathan: Subungual Exostosis of the Great Toe; Excision with Success, Lancet **2**:246, 1857.

and backward. The surface of the tumor is smooth during the early course of the disease, but later a cornified appearance develops and still later the growth may ulcerate. The overlying nail becomes brittle and it either breaks or is removed. The tumor now released mushrooms upward and anteriorly above the level of the nail. The pressure of the shoe becomes unbearable, and the patient limps with a tendency to walk with the foot in eversion. The tumor is a dense mass of fibrous tissue overlying the cartilaginous or osseous spur beneath. If secondary infection has occurred, the surface may be moist and eroded, but it lacks the soft, easily bleeding characteristics of granuloma pyogenicum with which it may easily be confused. The adjacent soft tissue may be eroded and swollen when secondary infection is present, and there may be some superficial resemblance to ingrowing nail. The growth of the tumor is usually slow, and after it reaches a diameter of from 0.5 to 1 cm. it ceases to grow and becomes completely osseous.

Subungual exostoses develop more frequently during adolescence than during other periods. The average age in thirteen cases reported by Williams [2] was 18 years, and in forty-two cases reported by Kurtz,[3] the ages varied from 6 to 50, the larger number appearing between the ages of 15 and 30. Both sexes are subject to the condition, although it is three times more frequent in women than in men.

As already stated, the condition is not rare. Kurtz declared that in none of his forty-two cases observed during a period of ten years had a correct diagnosis been made although the patients had been under the care of capable men. It is natural that chiropodists should see most of these cases early in their course; failing to secure relief, however, the patients apply for medical care. I have seen three cases during a period of four months, and my difficulty in recognizing the true nature of these tumors has prompted an investigation of the literature and the writing of this paper.

REPORT OF CASES

Case 1.—S. M., a white youth, aged 19, consulted me on Jan. 22, 1930, because of a painful growth under the left great toe-nail. He noticed a small tumor, which he considered a wart, appearing under the inner middle portion of this nail four months previously. Pain and tenderness increased, and six weeks previously he consulted a chiropodist who removed the nail over the surface of the growth. Since then there had been a rapid increase in the size of the tumor together with marked increase of pain and tenderness, requiring the cutting away of the toe of the shoe over the growth. There was a firm fibrous nodule, the size of a hazelnut, showing a tendency to pedunculation of the base and covered by dry, keratotic fibrous tissue that could be peeled off like thin layers of an onion, leaving a smooth pink nodule. There was little tendency toward bleeding, and no secondary infection. The tumor was firmly attached to what was considered the matrix of the nail and it was practically immovable. This nodule was removed for microscopic study (fig. 1); the base was fulgurated and 1½ skin units (450 R units) of unfiltered x-rays were given. Relief from pain followed; the nail returned, and when the patient was last seen (June 14, 1930) there were no symptoms. There was no history of previous injury. Roentgen examination (fig. 2) at this time,

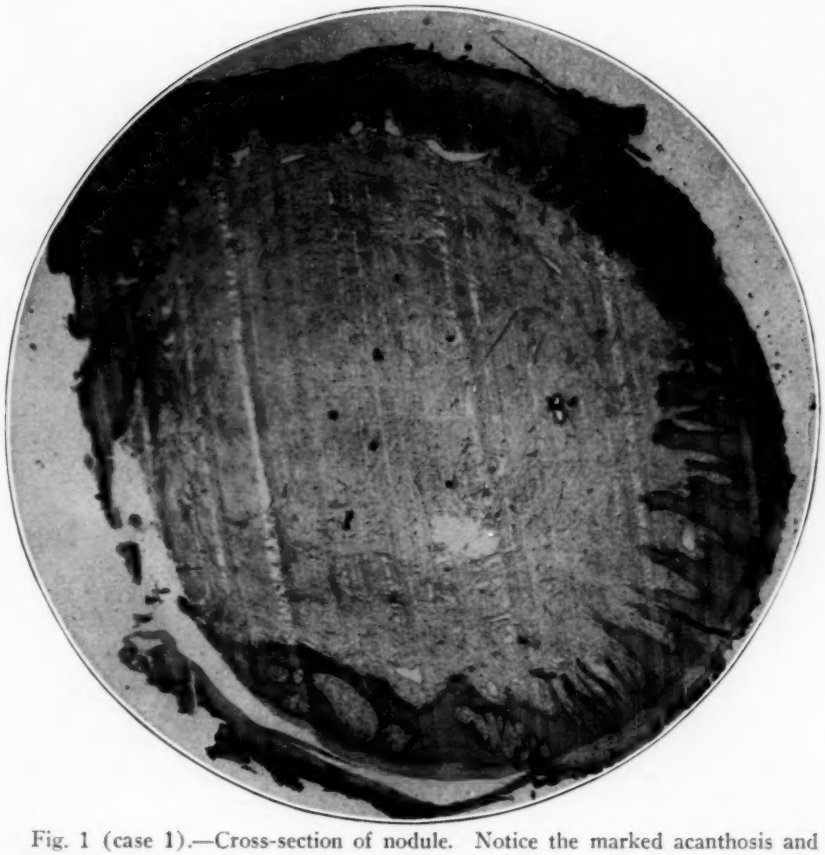

Fig. 1 (case 1).—Cross-section of nodule. Notice the marked acanthosis and hyperkeratosis and the dense fibrous character of the central area; × 15.

Fig. 2 (case 1).—Stump of exostosis remaining after superficial removal of the nodule. Notice the regrowth of the nail. Recurrence may be expected.

Fig. 3 (case 2).—Intermediate type of subungual exostosis. The nature of the growth may be readily recognized under roentgen examination.

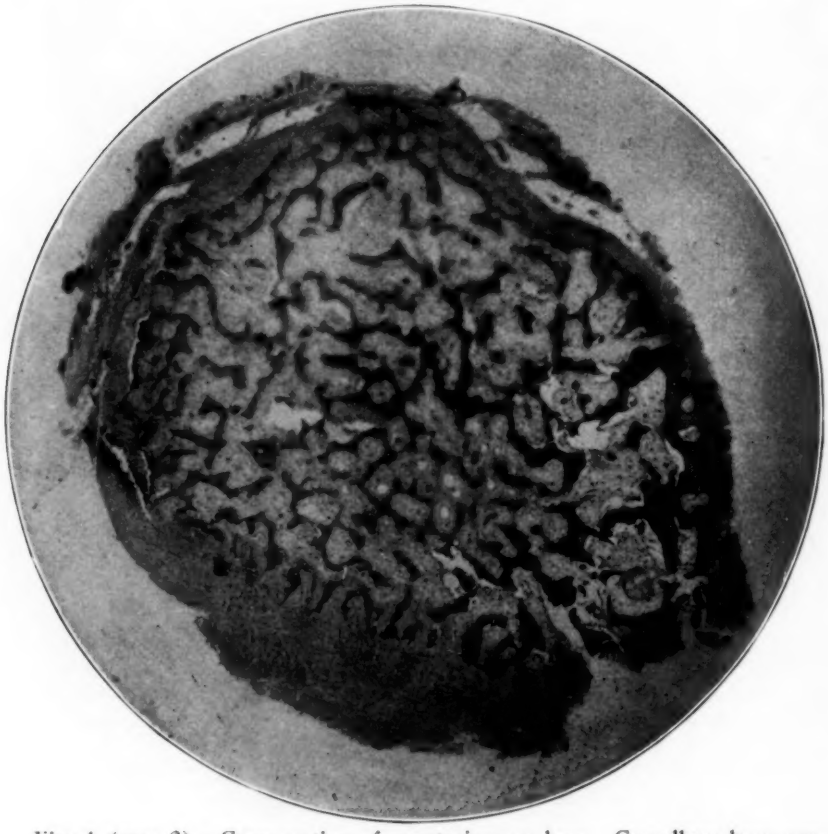

Fig. 4 (case 2).—Cross-section of exostosis near base. Cancellous bone surrounded by fibrous sheath; × 15.

however, revealed the stump of the exostosis, confirming the diagnosis, and later recurrence is to be expected.

CASE 2.—H. M., a white woman, aged 26, reported to me on April 16, 1930. She first noticed pain and tenderness beneath the left great toe-nail in September, 1929. The condition occurred after a vacation in which she did a great deal of walking, and she considered this the cause, but there was no definite injury. A red spot appeared under the inner border of the nail and the latter became slightly elevated. She reported to a chiropodist who removed the nail over the growth, and a firm pinkish nodule rapidly developed. Later a physician incised the lesion but obtained no pus. Clinically, there was a tumorous mass, the the size of a hazelnut, arising from the left central area of the nail-bed. It was secondarily infected and superficially ulcerated. It was extremely sensitive and spontaneously painful, so that the patient had been unable to secure much sleep. She was referred to Dr. Carl E. Badgley, orthopedic surgeon for the Henry Ford Hospital. X-ray plates showed a bony exostosis along the inner side of the middle portion of the distal phalanx of the great toe (fig. 3). Excision of the exostosis under local anesthesia was performed by Dr. Badgley. An incision was made along the periphery of the tumorous mass which extended directly down to the phalanx. It was a true bony structure. It was cut free from the phalanx by a small osteotome; the cortex of the phalanx was further curetted free of all spicules of bone, and the wound was packed with gauze smeared with petrolatum. After operation the patient made an uneventful recovery with complete relief from pain and with no recurrence of the symptoms. She has not been seen since the wound healed.

Sections showed the surface epithelium greatly thickened (acanthosis, hyperkeratosis and parakeratosis). Beneath it there was areolar tissue infiltrated by round and wandering cells and polymorphonuclear leukocytes. Sections from the exostosis (fig. 4) showed a center of cancellous bone with an abundance of normal marrow surrounded, for the most part, by compact bone.

CASE 3 (Courtesy of Dr. Badgley).—I. P., a white girl, aged 16, reported to the orthopedic service of Dr. C. E. Badgley at the Henry Ford Hospital on May 5, 1930. She had noticed pain and tenderness under the right great toe-nail for six months. She noticed that the nail was slowly being raised from its bed by a tumor, the edge of which appeared under the inner border. Acute swelling had appeared two weeks previously. One week after the appearance of the swelling, she went to a chiropodist, who cut away one third of the inner portion of the nail. At the time of examination she presented a tumorous mass, the size of a small hazelnut, arising above the remaining portion of the nail and covered by a crust with some purulent discharge. The mass could be followed by a probe to its base which apparently was attached to the phalanx. Roentgen examination (fig. 5) showed a calcified area arising from the terminal phalanx of the great toe. The mass was not cancellous in appearance and could not be described as a true exostosis; it was possibly caused by calcification in a primary soft tissue tumor or in an osseous tumor. An operation was performed on May 8, by Dr. Badgley. The preoperative diagnosis was granuloma pyogenicum over an exostosis of the phalanx. The tumorous mass was exposed under local anesthesia. It was freed down to its bony attachment to the phalanx and was removed by the curet. The wound was packed with gauze smeared with petrolatum. The area filled in rapidly with granulation tissue. Symptoms completely disappeared. Roentgen examination showed a regeneration of bone and a small tumorous mass still remaining.

Sections showed the exostosis partially covered by cartilage and the underlying portion composed of cancellous bone. The tissue immediately surrounding the cartilage or between the cartilage and the fibrous stroma (fig. 6) was very active,

Fig. 5 (case 3).—Immature form of subungual exostosis. Only a faint shadow of the early cartilaginous exostosis is apparent.

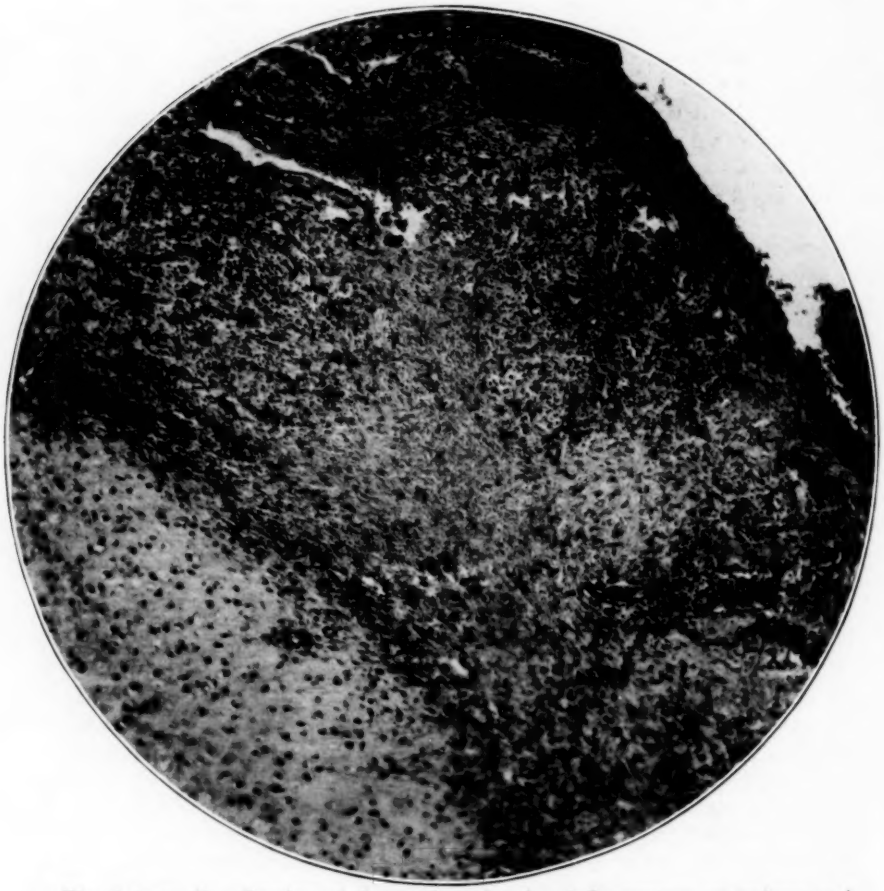

Fig. 6 (case 3).—Portion of the section, showing inflammatory granuloma and fibrous hyperplasia suggestive of malignancy, immediately overlying a cartilaginous area.

with many cells which were undergoing mitosis, but it was believed that this was due to infection and trauma rather than to neoplasm.

CASE 4.—A. B., a girl, aged 12, was first seen by me on May 26, 1930. She had had a fibrous tumor projecting from beneath the inner free edge of the left great toe-nail for a year. Her mother felt that the tumor was caused by having the feet stepped on in school, but a definite history of injury was uncertain. I discovered the condition while making a routine examination of the feet of school children for epidermophytosis. The growth caused only slight discomfort; this was probably because of its anterior position and the protection afforded by the nail. A tumorous mass, the size of a split pea, projected beyond the free edge

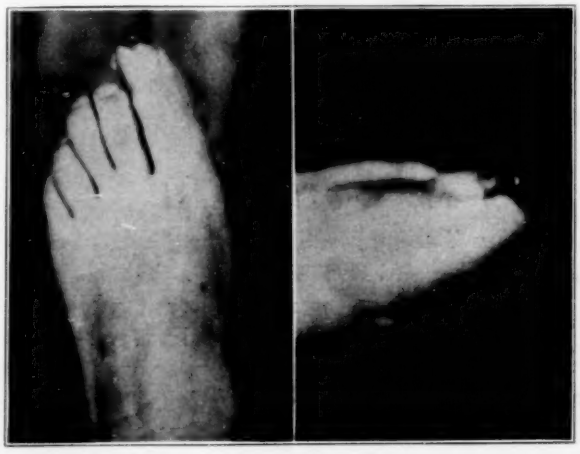

Fig. 7 (case 4).—Tumorous mass covered by dense keratotic crust and extending beyond the free edge of the nail.

Fig. 8 (case 4).—Mature form of subungual exostosis. The exostosis is shown in sharp detail and a faint outline of the nodule is apparent.

of the nail (fig. 7). It was covered by a dense keratotic crust which, when removed in mass, revealed a pinkish smooth firm fibrous nodule which could be traced backward under the nail to about its median portion. It was slightly pedunculated, and the base could be separated from the surrounding soft tissue and traced backward as a separate structure like a fibrous plug driven under the nail. There was no evidence of inflammation or infection. Roentgen examination revealed clearly a sharply defined bony exostosis that evidently had been deflected anteriorly when it reached the nail-plate (fig. 8). The exostosis ended sharply in

a point at a level with the end of the great toe and this in turn was surrounded by a thick fibrous sheath at its free extremity. Because of the lack of symptoms, treatment was refused at the present time. This is considered as an excellent example of the mature form of subungual exostosis.

COMMENT

According to Williams,[2] subungual exostoses originate from a cartilaginous rest which is generally situated beneath the periosteum of the phalanx in the vicinity whence these outgrowths arise. As the cartilaginous bud develops, it grows upward, seemingly as a branch from the phalanx; this bud, when it becomes completely osseous in a typical mature specimen, consists externally of dense cortex and internally of trabecular structure both of which are directly continuous with the corresponding structures of the phalanx. Between this typical blending with the phalanx and the complete separation of the growth, to such an extent as even to suggest a sesamoid bone, every intermediate grade may be met; pedunculated forms and fibrocartilaginous attachments are common. The greatest difficulty in diagnosis arises from early cases in which ossification has not occurred. The early immature or cartilaginous forms may present negative roentgen observations, and pathologic sections may show such a marked proliferation of immature fibroblasts or epithelial cells as strongly to suggest malignancy, as in case 3. In a personal communication, Dr. John H. Stokes of Philadelphia reported such a case in which, according to his opinion, the tumor was one of these immature forms, yet because of the suggestive microscopic picture, the surgeon in charge amputated the toe. Such a suspicion may be materially strengthened by the tendency of these tumors to recur locally after removal unless their matricular structures are completely removed. These tumors are, however, essentially benign. I have been unable to find a report of any instance in which malignant properties were definitely manifested.

Although trauma is usually mentioned as an important factor in the etiology, the majority of cases seemingly arise spontaneously. If trauma was the sole cause, it would be difficult to explain the constancy with which they arise from the tibial side of the ungual phalanx of the great toe. Another strong reason for believing that they are not simply irritative phenomena is the arrest of their growth after they have attained a certain mature structure. The explanation for these tumors given by Williams [2] would seem to be the most logical; namely, that they bear more resemblance to a teratologic anomaly than to a neoplasm. In human embryos of the second month, a distinct cartilage is present on the tibial side of the tarsus, this probably corresponds to a rudimentary first toe (prehallux). This could well be the cartilaginous germ of the subungal exostosis. Trauma might conceivably play an important part in precipitating its growth.

There is uniform acceptance of total excision as the best method of treatment. If the tumor is simply removed to the normal level of the bone, it usually recurs, whereas if it is peeled out of the bone leaving a cavity with some condensation of bone about it, it never recurs. Operation is satisfactorily performed under local anesthesia. The matrix of the nail should not be injured. The operative procedure may well be summarized from Kurtz [3] as follows:

> A gouge or small chisel should be started beneath the growth from in front backwards and downwards until the phalanx is reached. The growth may then be peeled from its bed, the edges of the cavity trimmed and the wound packed. Oozing is the rule but bleeding is not severe. Wet dressings may be applied and the patient instructed to remain off his feet for twenty-four hours. After that time the usual occupation may be resumed. Relief from pain is surprisingly prompt. Granulation rapidly occurs, and after two weeks the patient may be discharged from observation.

SUMMARY

Subungual exostoses are curious (but not rare), solitary, benign, slow growing, painful tumors, appearing as fibrous nodules, the size of a pea, almost invariably beneath the inner or tibial margin of either great toe-nail. They arise from a cartilaginous outgrowth from the inner middle portion of the last phalanx of the great toe and later become osseous. Their attachment to the phalanx, although usually complete and osseous, may be partial or fibrocartilaginous or even, more rarely, lacking. They affect either foot with equal frequency and are three times as common in women as in men. They arise most frequently between the ages of 12 and 30. They may be readily confused with granuloma pyogenicum, ingrowing nail, simple fibroma or, of even more importance, with malignancy. There is little about the firm, fibrous nodule, which in the early stages of the disease is pink and later becomes keratotic, to suggest the underlying early or matured exostosis. The growths probably represent a teratologic anomaly, although trauma may be a factor in precipitating their growth. Roentgen examination is diagnostic except in early immature growths. Surgical excision is the accepted method of treatment, but the growth must be completely removed in order to avoid recurrence.

SCHAMBERG'S DISEASE ASSOCIATED WITH HEMOCHROMATOSIS *

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CHICAGO

Since the disease known as Schamberg's progressive pigmentary dermatosis was described in 1901, several articles have appeared that have dealt largely with clinical and histologic features of the disease. The first communication delving into a possible background in the patient's general condition was by Schamberg,[1] who reported finding high amounts of cholesterol in the blood in three personally observed cases, and who reported Templeton's finding of high amounts of cholesterol in the blood in one of two cases. No cause for this observation was found in any case. The following case from the service of Dr. Louis Leiter represents the combination of Schamberg's disease and hemochromatosis, with high amounts of cholesterol in the blood. However, in this patient the cholesterol value of 296 mg. per hundred cubic centimeters was found only two days after admission to the hospital at a time when the diabetes was not yet under control. Unfortunately, no other determinations were carried out later when the patient was well adjusted to the diabetic regimen. No conclusion can be drawn, therefore, in regard to the relation of Schamberg's disease to the amount of cholesterol of the blood in the case reported here. The combination with hemochromatosis is interesting in that both conditions result in iron-containing deposits, which suggests that the two diseases may have some etiologic factors in common.

REPORT OF A CASE

History.—A man, aged 37, was first examined on Sept. 23, 1929. He complained of diabetes, nasal obstruction, bowel distress and cramps in the legs. Two months previously, he had noticed loss of weight, polydipsia, polyuria and weakness. Two weeks later, he had consulted a physician who made a diagnosis of diabetes and who treated him by means of restriction of diet. The patient said that ten years previously he had observed discoloration of both legs, which had begun as erythema, and which was followed by a brown discoloration. It gradually spread from the ankles to just below the knees. The legs had never been swollen.

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* From the Division of Dermatology of the Department of Medicine of the University of Chicago.

1. Schamberg, J. F.: Report of Three Cases of Progressive Pigmentary Dermatosis with Particular Reference to Blood Cholesterol, Brit. J. Dermat. **39:** 389 (Oct.) 1927.

Physical Examination.—Physical examination showed a poorly developed, fairly well nourished person, who was sensitive to pain and nervous. The blood pressure was 120 systolic and 80 diastolic. The liver was hard and smooth with the lower border two fingerbreadths below the costal margin. The edge of the spleen was barely palpable. The skin of the entire body was thin and dry. The hands and face were hyperpigmented, and in addition to the brown color had a slight but definite metallic hue. On both legs, extending from the ankle to just below the knee, there was a more or less diffuse, yellowish-brown pigmented area in which there were erythematous puncta. The region covered by the garter was

Progressive pigmentary dermatosis.

not involved, and the patient stated that he had always worn his garters very tight. The urine contained dextrose, diacetic acid and acetone in moderate amounts. A diagnosis of diabetes mellitus with Schamberg's disease and hemochromatosis was made.

Histologic Examination.—Sections of skin were removed from the hand, leg and shoulder. In all three regions brownish pigment was found in histiocytic cells surrounding the sweat glands. In addition, the superficial dermis of the section from the leg showed a large amount of yellow pigment in histiocytic cells. The reaction to iron was positive in all sections. The finding of the iron-containing pigment in histiocytic cells surrounding the sweat glands verified the diagnosis of hemochromatosis. The section of skin from the leg showed marked thinning

of the epidermis, with complete disappearance of interpapillary processes. The dermis was filled with phagocytic cells containing brownish pigmented granules, which gave a positive reaction to iron. Only slight cellular infiltration was noted. This picture is found in a case of Schamberg's disease of long standing.

Course.—The patient responded rapidly to standard diabetic management and treatment with insulin. When he was discharged from the hospital he was taking a diet containing 100 units of carbohydrate, 70 units of protein and 200 units of fat with 25 units of insulin administered before breakfast and 18 units before dinner. A month later the dosage of insulin was reduced, as the patient was reporting reactions to insulin. After November 12, the patient failed to return to the University Clinics, and a letter from his local physician stated that the patient had died in diabetic coma in the summer of 1930. No further details were furnished.

SUMMARY

A case of Schamberg's disease with hemochromatosis is reported. There was an elevation of the cholesterol in the blood which may have been due to diabetes. This case suggests the advisability of careful study of patients with Schamberg's disease, including a test for dextrose tolerance to determine whether diabetes is present.

CUTANEOUS LYMPHOBLASTOMA

REPORT OF TWO UNUSUAL CASES *

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The group of diseases commonly included under the terms Hodgkin's disease, lymphosarcoma, leukemia, mycosis fungoides and others even less sharply defined, is still so obscure as to etiology and interrelationship that any attempt at classification must, of necessity, be incomplete and unsatisfactory. Although the "Handbuch der Haut- und Geschlechtskrankheiten" still aims to maintain these diseases as entities, there has been a growing tendency in this country to regard them as varied clinical manifestations of the same disease,[1] and as comparable to such known specific diseases as syphilis, tuberculosis and leprosy in their varied clinical manifestations. Mallory,[2] and later Keim,[3] suggested the term lymphoblastoma for the entire group. Our experience also harmonizes with and accentuates the conception that the diseases that make up the group are genetically closely related. In a considerable number of the cases at the Mayo Clinic manifestly belonging to this group, characteristics were shown in the earlier stages that pointed to one disease, only to change later and to end with characteristics of another disease, or possibly of several diseases simultaneously. We shall report two cases, because of their unusual clinical and histopathologic manifestations and because of their rarity.

REPORT OF CASES

CASE 1.—*History.*—A man, aged 65, came to the Mayo Clinic in November, 1929. His history was not of significance, but for about nine months he had noticed "blisters" of varying size which began on the legs and spread rapidly

* Submitted for publication, Feb. 3, 1931.

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1. Baldridge, C. W., and Awe, C. D.: Lymphoma, Arch. Int. Med. **45**:161 (Feb.) 1930. Fraser, J. F.: The Interpretation of Mycosis Fungoides as a Variety of Lymphosarcoma, Arch. Dermat. & Syph. **11**:425 (April) 1925; Mycosis Fungoides: Its Relation to Leukemia and Lymphosarcoma, ibid. **12**:814 (Dec.) 1925. Keim, H. L.: Universal Leukemia Cutis, Arch. Dermat. & Syph. **10**:579 (Nov.) 1924; The Lymphoblastomas; Their Interrelationships, ibid. **19**:533 (April) 1929. Miller, H. E.: Lymphogranulomatosis Cutis, Arch. Dermat. & Syph. **17**:156 (Feb.) 1928.

2. Mallory, F. B.: The Principles of Pathologic Histology, Philadelphia, W. B. Saunders Company, 1914, p. 326.

3. Keim (footnote 1, fifth reference).

over the entire body. Coincident with the eruption, the general health had declined. There had not been any itching or pain.

Examination.—When the patient was first seen, local care of the body had been neglected and it was literally covered with crusts and débris, probably mixed with dead epithelium and dirt. It was apparent even then, however, that the elementary lesions were large bullae, and the first thought was that we might be dealing with pemphigus, especially since an exceedingly foul odor emanated from the lesions. After the lesions had been cleaned by baths and other measures, it was manifest that the condition was not pemphigus. The individual lesions were definitely arciform, coalescing in certain areas, and scroll-like. The borders were acutely inflamed and infiltrated. A striking feature was the apparent drying of the bullae into hard, adherent crusts, simulating sphaceli, and the healing of the lesions, with superficial scarring. At a distance sufficient to obliterate detail, the

Fig. 1 (case 1).—Configuration of the lesions and bullae.

condition called to mind the familiar, early, tumor stage of mycosis fungoides (fig. 1). Clinically, there were no other data that might contribute to a diagnosis. The concentration of hemoglobin was 40 per cent, and the erythrocytes numbered about 2,500,000 per cubic millimeter of blood. The results of the differential leukocyte count were within normal limits. The Wassermann reaction and cultures of the blood were negative. It was impossible to make a definite clinical diagnosis.

Biopsy.—While the patient was in the hospital, specimens of early bullous lesions of the thorax and abdomen were obtained for a biopsy. All of the sections revealed malignant destructive invasion of the epidermis by cells of the lymphocytic series. There were a dense, bandlike infiltrate in the upper part of the cutis and ulceration of the epidermis where the infiltrate was most marked. The infiltrate was composed chiefly of lymphocytes and lymphoblasts, which varied in size and maturity, and in which there were numerous mitotic figures.

These changes were most striking in the sections from the thorax preserved in alcohol and became increasingly more pronounced from the periphery to the center, culminating in ulceration and necrosis. At the periphery of the lesion (fig. 2) there first occurred a moderate infiltrate of lymphocytes and plasma cells about the blood vessels in the upper part of the cutis. Slightly more in the center, there was invasion of the epidermis by cells of the lymphocytic series. The stratum granulosum and stratum corneum remained unaltered. Nearer the center, the infiltrate extended higher in the epidermis, pushing apart the epidermal cells and resulting in edema and broadening of the rete ridges and the development of small regions of parakeratosis. In places, the basal cell layer was no longer intact, so that groups of epidermal cells could be found in the cutis. Still more centrally, the epidermis became very thin, until it was composed of only one or two layers of elongated parakeratotic cells. This thinning appeared to be due in

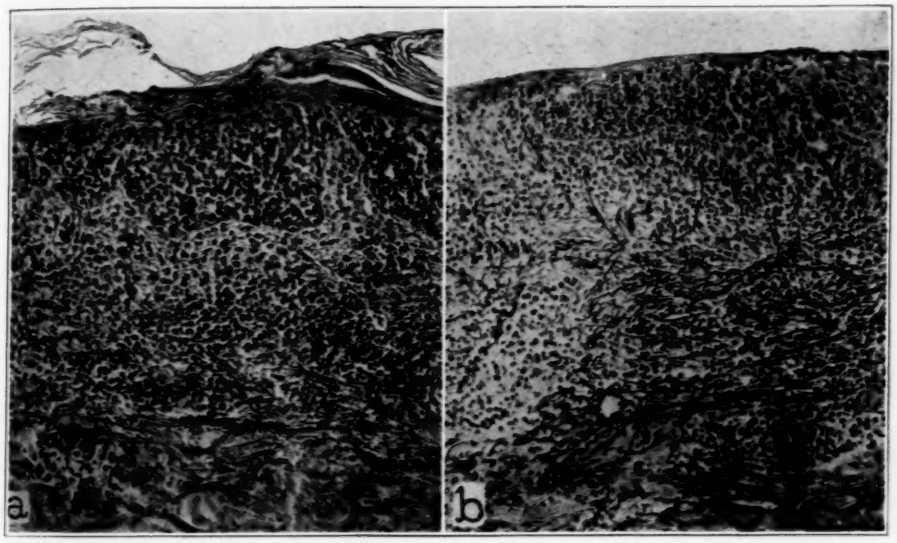

Fig. 2 (case 1).—*a*, destructive invasion of the epidermis by cells of the lymphocytic series, with atrophy of the epidermis at the left and limitation of the infiltrate to the upper part of the cutis; × 75. *b*, area similar to that in *a*, showing preservation of elastic fibers although separated by edema; × 75.

part to destruction of the epidermis by the invading cells and in part to pressure atrophy from the infiltrate. Finally, in the center of the lesion, a region of ulceration and necrosis was reached. The ulcer was covered with a crust composed of polymorphonuclear leukocytes, serum and débris of cells. In one place there was a subepidermal vesicle filled with serum surrounded by a lymphoblastomatous infiltrate.

Where the epidermis revealed early invasion by the lymphocytic cells (fig. 3), the cells appeared to lie in spaces within the epidermis, similar to those occupied by Paget cells in cases of Paget's disease of the nipple. However, these cells presented the morphologic characteristics and staining reactions of lymphocytes and lymphoblasts. The cells varied greatly in size and maturity and revealed numerous mitotic figures. The adjacent cells of the epidermis also revealed an

occasional mitotic figure either of a prickle cell or, less frequently, of a basal cell. In spite of this evidence of increased cellular activity, there was no appreciable acanthosis or thickening of the epidermis. In sections stained with silver nitrate there was a spotted distribution of melanin pigment, chiefly in dendritic cells in the epidermis and in scattered places in chromatophores in the cutis. None of the lymphocytic cells contained pigment. A stain for hemosiderin gave negative results.

The infiltrate limited fairly sharply to the upper part of the cutis was perivascular at the periphery, but became denser and more diffuse as it approached the center. It was composed of cells of the lymphocytic series, which varied greatly in size and maturity, and in the denser areas there were numerous mitotic figures.

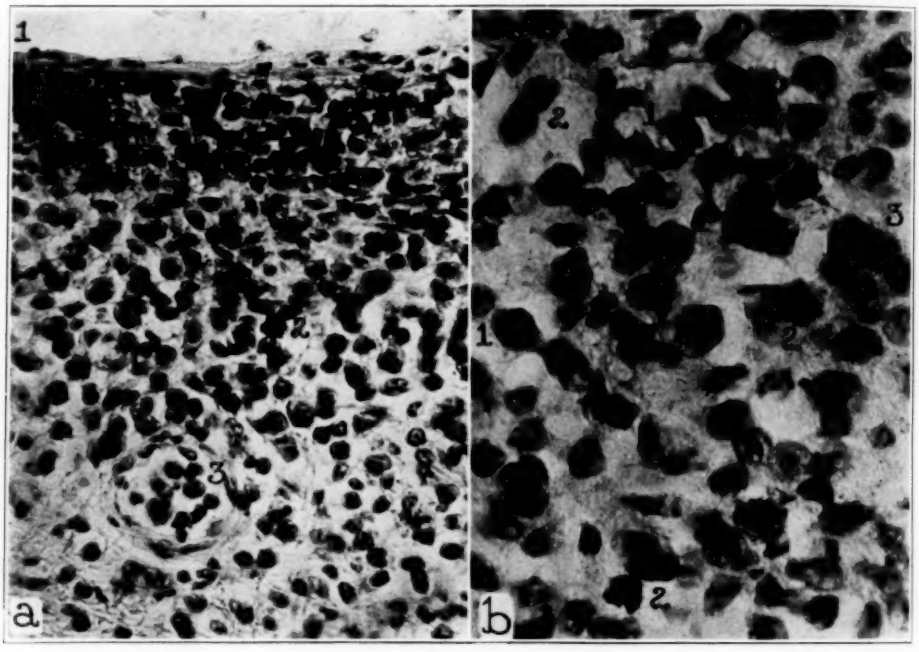

Fig. 3 (case 1).—*a*, remains of epidermis at *1;* dense infiltration with lymphocytic cells showing mitotic division at *2,* and a capillary filled with lymphocytes at *3;* × 250. *b*, portion of the infiltrate near the region of ulceration, where variation in the cells was more marked: plasma cells at *1;* mitotic figures at *2,* and large cell with multiple nuclei at *3;* × 600.

A few plasma cells and fixed connective tissue cells, as well as an occasional mast cell, were seen. In a few portions there was an occasional large cell containing two or three nuclei and having scanty cytoplasm. These cells did not suggest Sternberg cells or the clumping of cells seen in mycosis fungoides. In the places in which ulceration was taking place, however, there were greater multiplicity of cellular types, including a considerable number of leukocytes, and pyknosis karyorrhexis of the individual cells. In none of the sections were eosinophils to be found. Confirmation that the cells of the infiltrate as well as those invading the epidermis were of the lymphocytic series was obtained by staining with Giemsa's

stain and also with McJunkin's oxidase stain. None of the cells gave a positive reaction, whereas cells from a control case of myelogenous leukemia cutis did give such a reaction. There were no changes of significance in the blood or lymph vessels. The elastic tissue was surprisingly well preserved. It was frayed and splintered and separated in places by edema and cellular infiltrate, but was destroyed only where the infiltrate was dense and necrosis was taking place. Similar changes were seen in the collagen fibers. There was no formation of collacin or collastin.

The sections from the thorax, which were preserved in formaldehyde, presented a picture similar to that described, with possibly more numerous mitotic figures and a denser infiltrate. The cells were more uniformly lymphoblastic. In one place, there was a destructive infiltrate of the walls of a hair follicle, and in another, a perineural infiltrate without degenerative changes in the nerve. In the sections from the abdomen preserved in alcohol and formaldehyde, there were less marked changes than in those from the thorax.

Gram's stain revealed collections of cocci in the crusted and ulcerated portions but none in the cutis beneath the intact epidermis, nor were any found in sections from the abdomen that did not contain ulcerative changes. Sections were stained for bacilli of tuberculosis, but none was found.

Necropsy.—At necropsy the following diagnosis was made: bilateral bronchopneumonia, dilatation of the heart, diverticulum of the base of the bladder, healed tuberculous lesions of the spleen, nodes of the hilus and lungs, mild arteriosclerosis, polyp of the stomach, chronic cholecystitis and cholelithiasis and cyst of the liver.

The microscopic changes confirmed the gross evidence. Signs of Hodgkin's disease, lymphatic leukemia or lymphosarcoma could not be found in any of the lymph nodes or in other organs of the body. Degenerative changes were present in the dorsal root ganglions of the spinal cord; this could account for the absence of pain.

The sections of skin removed at necropsy differed from those taken during life only in that the former contained less marked infiltrate whereas regions of ulceration, with necrosis of connective tissue, were a prominent feature. In sections from a healed lesion, there was scar tissue, with a very thin, hyperpigmented epidermis.

Comment.—It would have been impossible to classify this case without microscopic examination of a section of the skin. Even with this examination, it was not possible to make a definite classification. In favor of a diagnosis of lymphosarcoma are the following: the malignant invasive character of the cellular infiltrate, the lymphocytic character of the cells, their immaturity and the mitotic figures. However, in lymphosarcoma, the epidermis is usually not invaded, and more destruction of the elastic fibers results. In leukemia cutis, the infiltrate is usually confined to the cutis and there is only an occasional mitotic figure. The lesion may be primary in and remain restricted to the skin, although rarely.[4] The absence of myelocytes and the negative oxydase reaction would rule out myelogenous leukemia. The absence of Sternberg cells

4. Hirschfeld, Hans: Ueber isolierte aleukämische Lymphadenose der Haut, Ztschr. f. Krebsforsch. **11**:397, 1912.

and eosinophils and the lack of increase in the number of connective tissue cells are against a diagnosis of Hodgkin's disease. The pyknosis, karyorrhexis and clumping of cells usually seen in mycosis fungoides [5] were absent, except in the ulcerative portions, where they were of no diagnostic significance. The sections and a brief résumé of the case were submitted to eight pathologists of the United States, all of whom are of national or international reputation and three of whom have been particularly interested in the condition under consideration. Two of them believed that the lesion was a primary neoplasm of the skin, with multiple points of origin simulating Paget's disease, or even non-melanotic melano-epithelioma. They interpreted the primary change as taking place in the epidermis, and thought that most of the cells of the infiltrate were altered epidermal cells. The other six pathologists regarded the cells of the infiltrate and those invading the epidermis as of lymphocytic origin and interpreted the pathologic picture as that of a malignant lymphoma of the skin.

Clinically, it would be difficult to conceive of a true neoplasm manifesting itself in the rapid development and involution of large bullae, each lesion progressing from its incipiency to complete healing with superficial scarring within several weeks. The numerous lesions covering a greater part of the integument without internal involvement should also be against a diagnosis of true neoplasm. Bullous eruptions have been reported in all the lymphoblastomatous diseases, particularly Hodgkin's disease. It is also possible that these diseases may be primary in the skin,[6] but when the lesions were bullous a specific infiltrate has never been reported,[7] except in mycosis fungoides.[8] The transient character of the lesions in this case, their definite infiltration of the borders with crescentic outline, their coalescence with the formation of bizarre figures, the central gangrene with complete spontaneous healing

5. Gans, Oscar: Histologie der Hautkrankheiten, Berlin, Julius Springer, 1925-1928, vols. 1 and 2.

6. Hirschfeld (footnote 4). Frieboes, Walter: Multiples idiopatisches Lymphosarkoma cutis, Sarkomatosis cutis Spiegler und sarkoide Tumoren, Dermat. Ztschr. **24**:257, 1917. Kyrle, J.: Vorlesungen über Histobiologie der menschlichen Haut und ihrer Erkrankungen, Berlin, Julius Springer, 1927, vol. 2, p. 269.

7. Bloch, Bruno: Erythema toxicum bullosum und Hodgkinische Krankheit (Sternbergsche chronisch-entzündliche Form der Pseudoleukämie), Arch. f. Dermat. u. Syph. **87**:257, 1907. Cabot, R. C., and Cabot, Hugh: Case Records of the Massachusetts General Hospital: Case 11112, Boston M. S. J. **192**:492 (March 12) 1925. Hoffman, Erich: Lymphogranulomatose (Hodgkinische Krankheit) mit pemphigusartigen Ex- und Enanthem neben granulomatösen Hautknoten, Deutsche med. Wchnschr. **2**:1117 (Sept.) 1915. Königstein, H.: Hauterscheinungen bei Lymphogranulomatose, Arch. f. Dermat. u. Syph. **119**:107, 1914. Yamasaki, quoted by Bloch (first reference).

8. Hallopeau and Railliet: Mycosis ou pemphigus végétant frusté? Bull. Soc. franç. de dermat. et syph. **18**:311, 1907.

and the lack of involvement of internal structures favor mycosis fungoides. The rapidly fatal termination and the bullous character of the lesions, however, are unusual in mycosis fungoides, although fatal termination within a year [9] and bullous forms resembling pemphigus are on record.[10] There was, therefore, much in the clinical behavior to favor a diagnosis of mycosis fungoides. The usual microscopic characteristics, however, were conspicuously absent. The histopathologic picture was more consistent with lymphosarcoma, but it was not entirely inconsistent with mycosis fungoides.

If it were permissible to assume that mycosis fungoides may change into lymphosarcoma, this case would be fairly well explained. There are a number of cases on record that would indicate this possibility.[11]

The weight of opinion in this case establishes the pathologic picture as one of extensive infiltration of the skin with cells of the lymphocytic series. The peculiar destructive infiltration of the epidermis by these malignant cells is unique in our experience. The negative results of studies of the blood and of postmortem observations point to a diagnosis of primary lymphoblastoma of the skin.

CASE 2.—*History.*—A woman, aged 62, was first seen in October, 1929. She had injured her leg at the site of the ulceration of which she complained about three years before admission, but she had had no permanent discomfort until she received another injury at the same place eighteen months later. Since then an ulcer of irregular outline, involving the left tibia, had remained (fig. 4). For twelve years, the patient had also had a condition that she said was psoriasis.

Examination.—Examination disclosed a considerable number of infiltrated patches which at first suggested psoriasis, but which on more careful examination had decidedly more the characteristics of mycosis fungoides in the premycotic stage. The ulcer on the left leg remained unchanged during the entire period of observation. During the last two months of the patient's life, cutaneous hemorrhages developed. In the center of some of these hemorrhagic lesions, papules could be seen with seemingly necrotic centers. There was considerable adenopathy in the left side of the groin but nowhere else. The spleen was not palpable.

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9. Cabot and Cabot (footnote 7, second reference). Herxheimer, K., and Martin, H.: Mycosis fungoides, in Handbuch der Haut- und Geschlechtskrankheiten, Berlin, Julius Springer, 1928, vol. 8, p. 174. Riecke, Erhard: Ueber die sogenannte Parapsoriasis mit besonderer Berücksichtigung der Erythrodermia maculosa perstans, Arch. f. Dermat. u. Syph. **131**:480, 1921.

10. Hallopeau and Railliet (footnote 8). Kaposi, M.: Ueber Mycosis fungoides und ihre Beziehungen zu anderen ähnlichen Erkrankungsformen, Wien. med. Wchnschr. **37**:597, 1887. Reines, S.: Reizversuche bei einem Fall von Pemphigus und bei einem blastigen pemphigusähnlichen Exanthem (Vorstadium der Mycosis fungoides), Wien. klin. Wchnschr. **22**:672 (May 13) 1909. Wills, Kenneth: Case of Mycosis Fungoides, with Microscopic Section, Proc. Roy. Soc. Med. (Sect. Dermat.) **17**:3 (Oct. 18) 1923.

11. Mayr, J. K.: Zur Klinik und Histologie der Mycosis fungoides d'emblée, Dermat. Ztschr. **33**:185, 1921; Zur Klinik und Histologie der Mycosis fungoides, Arch. f. Dermat. u. Syph. **145**:306, 1924. von Zumbusch, L. R.: Beitrag zur Pathologie und Therapie der Mykosis fungoides, Arch. f. Dermat. u. Syph. **78**:21 and 263, 1906. Fraser (footnote 1, second and third references).

The concentration of hemoglobin varied between 40 and 50 per cent, and the erythrocytes numbered approximately 3,500,000 in each cubic millimeter of blood. Two differential counts at intervals of about two weeks disclosed a somewhat low proportion of lymphocytes, about 14 per cent each time. On December 17, detailed study of a blood smear revealed an increase in the number of platelets and monocytes, toxic granulation of the monocytes, a shift to the right of the monocytes and to the left of the neutrophils and hyperchromatic anachromasia; this picture was considered suggestive of Hodgkin's disease. Moderate hypertension and old iritis were also disclosed. Because of the persistent elevation of temperature, a culture of the blood and agglutination tests for typhoid fever and paratyphoid fever and for infection with *Alcaligenes abortus* and *Pasteurella tularense* were made, with negative results. The patient died on Jan. 11, 1930.

Biopsy.—While the patient was under our care, biopsy was performed on specimens from a superficial plaque on the arm and from the edge of the large ulcer on the leg (fig. 4). The sections from the arm revealed atrophy of the epidermis. In places there were small regions of parakeratosis above normal or

Fig. 4 (case 2).—Ulcerated lesions on the leg and a plaque of premycotic type near the knee.

increased stratum granulosum, and perivascular and diffuse infiltrate limited essentially to the upper part of the cutis and composed chiefly of mature, well differentiated lymphocytes. A peculiar invasion of the epidermis was noted, similar to that in case 1 but lacking its malignant character. Only an occasional mitotic figure could be found either in the cutis or in the epidermis. In some regions, the infiltrate suggested mycosis fungoides, as evidenced by the mutiplicity of cell types, pyknosis, karyorrhexis and clumping of the cells. There were many large cells of the fixed connective tissue type. Eosinophils, mast cells and Sternberg cells were not present.

Microscopic sections from the edge of the ulcer on the leg presented a picture different from those of the arm. There were marked, irregular acanthosis and hyperkeratosis without invasion of the epidermis by cells of any type (fig. 6). The cutis resembled granulation tissue and contained many dilated lymph and blood vessels. Some of the latter apparently were newly formed, whereas others revealed proliferation of the intima and were surrounded by plasma cells, simulating a syphilitic process. In some of the deeper blood vessels there were proliferation of the intima and edema of the walls, and, in one instance, invasion of all the layers of the vascular wall by a dense lymphatic infiltrate. In the middle portion

of the cutis, and occasionally near the epidermis, there were dense nodules composed of lymphocytes and a few plasma cells. Occasional mitosis of a lymphocytic cell or of a fixed connective tissue cell was seen. Numerous mast cells were present throughout the cutis. There were no Sternberg cells or eosinophils. The elastic tissue was completely destroyed where the dense collections of lymphocytes occurred and was absent in the regions where there was granulation tissue; Gram's stain revealed masses of cocci on the surface of the ulcer, but none in the cutis. Bacilli of tuberculosis were not found either in the section from the arm or in that from the leg. Stains for iron revealed deposits of hemosiderin scattered throughout the cutis.

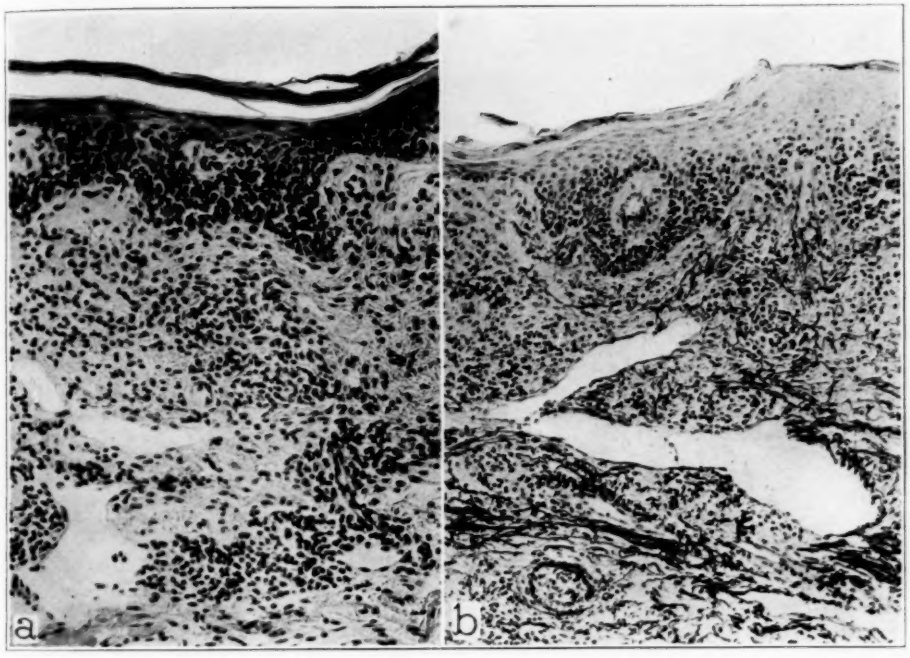

Fig. 5 (case 2).—*a*, section from the premycotic plaque. There is an invasive infiltrate of epidermis similar to that in case 1, but the cells are well differentiated lymphocytes; × 140. *b*, region similar to that in *a*, showing preservation of elastic tissue and dilated lymph vessel; × 115.

Microscopically, the biopsy on tissue from the arm suggested mycosis fungoides; that on tissue from the leg, lymphosarcoma of low grade.

Necropsy.—Postmortem examination revealed marked ulceration of the left leg; multiple tumorous nodules in the stomach, with ulcers; tumorous nodules in the lungs, pancreas and breasts; thrombosis of the left iliac and femoral veins; old pulmonary embolism; organizing bronchopneumonia; chronic lymphadenitis of the left inguinal node; leiomyoma of the uterus; healed lesions of tuberculosis of a node at the hilus, and moderate arteriosclerosis.

The largest pulmonary nodules were at the apexes, 3 cm. in diameter, with a reddish center and a greenish periphery. Throughout the upper lobe of the left lung were hard yellowish-white nodules, each surrounded by a reddish border.

There were also nodules in the lower lobe of the left lung. There were subpleural nodules, 1 mm. in diameter, in the upper lobe of the right lung; two nodules in the middle lobe, 5 mm. in diameter, and four nodules in the lower lobe. There were ulcers at the fundus of the stomach, and several nodules, 0.5 cm. in diameter, slightly elevated, along the greater curvature of the stomach. The mass in the left breast was 6 by 7 by 2 cm. in various diameters; it was firm and yellowish white. There was a similar tumor, 2.5 cm. in diameter, in the right breast. On cross-section of the pancreas, several circumscribed, yellowish-white portions, 2 mm. in diameter, were seen, each surrounded by a red band of tissue. The mass in the left inguinal gland was 4 cm. in diameter.

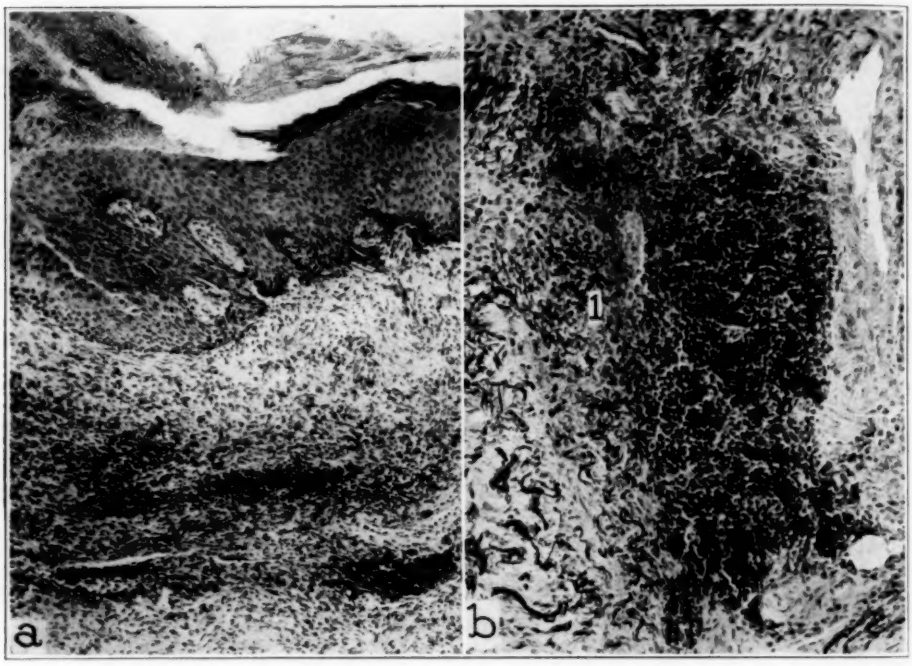

Fig. 6 (case 2).—*a*, section from the edge of the ulcer on the leg. The epidermis is not invaded. Acanthosis is evident, and there are dense masses of lymphocytes in the upper part of the cutis. *b*, a deeper area of the section than that in *a*, showing destruction of the elastic tissue and invasion of the walls of a blood vessel by a dense mass of lymphocytes at *1*; × 135.

Most of the nodules in the lungs contained an infiltrate, similar to that described in the sections of skin and composed chiefly of lymphocytes, with no mitotic figures. In one nodule from the left lung, there were atypical Sternberg cells, also occasional mitotic figures and many plasma cells. Eosinophils were not seen. The infiltrate in the gastric wall revealed some mitotic figures, small regions of necrosis and hemorrhage, a few eosinophils and an occasional atypical Sternberg cell. A section through a tumorous nodule in the head of the pancreas revealed a clumping of the cells, simulating Sternberg cells, and a diffuse lymphocytic infiltrate, with fairly numerous mitotic figures. Sections from the nodules in the breasts were similar to those in the lungs. In a piece of skin removed at post-

mortem examination there was a perivascular infiltrate, composed chiefly of lymphocytes, with an occasional eosinophil, but no true Sternberg cells. A section from the margin of the ulcer on the left leg contained regions of necrosis and "Wucheratrophie" and a dense mass of cells of the lymphocytic series within a lymphatic channel. The inguinal node presented a picture suggestive of Hodgkin's disease, including the presence of several multinucleated cells of the Sternberg type, with a few mitotic figures and many polymorphonuclear leukocytes and lymphocytes.

Comment.—Clinically, this case almost at once suggested the probability of lymphoblastoma, but illustrated the difficulty of finer differentiation. When the differential diagnosis between Hodgkin's disease, mycosis fungoides, lymphosarcoma and the various forms of leukemia was considered, it was impossible to reach a conclusion. The combination of features in this case was not consistent with a diagnosis of any of these diseases. The infiltrated, eczematoid patches suggested the early lesions of mycosis fungoides; there was nothing about them characteristic of psoriasis. Whether biopsy of one of these infiltrated plaques in the early years of their existence would have contributed anything definite must remain problematic. Even then, however critical consideration should have suggested mycosis fungoides rather than psoriasis. The microscopic appearance also favored a diagnosis of mycosis fungoides, not only because the appearance was different from that of psoriasis, but because it differed from that of other lymphoblastic diseases.

The ulcerations were clinically different from those ordinarily seen in mycosis fungoides in that practically the entire infiltrated area had become a complete slough, as contrasted to the partial ulcerations of the tumors of mycosis fungoides. Histologically, the borders of the ulcers favored a diagnosis of leukemia cutis or of lymphosarcoma, and a review of the sections of skin after necropsy did not alter this impression.

The cutaneous hemorrhages, with their minute necrotic centers, were thought to be leukemids, but since microscopic examinations were not made, they can be left out of further consideration. The combination of cutaneous lesions, then, was not such as is seen in any one of the diseases named.

There was no superficial adenopathy, except the enlargement of the nodes in the left side of the groin, which might have been inflammatory and secondary to the infected ulcers. Neither was there splenomegaly, but the changes in the blood were suggestive of Hodgkin's disease. At necropsy, further evidence for Hodgkin's disease was found in the infiltration surrounding the necrotic portions of the lungs, the multinucleated cells of the Sternberg type in the inguinal lymph node, and so forth. However, the lack of superficial adenopathy and splenomegaly and the multiformity of cutaneous lesions, with their atypical microscopic picture, were not diagnostic of Hodgkin's disease. Yet reports

have been published of a number of cases that were similar to ours, which were considered by the authors to be cases of Hodgkin's disease. The cases of Kren [12] and Dössekker [13] were practically identical. Alderson's case had deep ulcerations of the same type, but otherwise was typical of Hodgkin's disease. It seems to us that if strictly differential features are insisted on, these cases deserve consideration as a subgroup or even as an entity.

It is possible that this group is determined by the type of immunity reaction of the patients. The lesions in the skin are pronounced, destructive and specific for lymphoblastoma, although they are not necessarily specific for the subgroup, Hodgkin's disease. In the ordinary case of Hodgkin's disease, the lymphatic involvement predominates and the cutaneous lesions are not destructive, and usually are nonspecific, as though the primary involvement of the lymph nodes produced allergy in the skin, which permitted the skin to protect itself from destructive invasion.

In all cases of this special group, including our case 2, there was a definite history of trauma at the site of the ulcerative lesions, as though it might be the portal of entry of the virus, or at least the point at which the vicious nature of the process might have been incited. In the ordinary case, the clinical behavior is more suggestive that the portal of entry lies in the mucous membranes. Possibly, then, the clinical behavior of these diseases is in part at least determined by the method of entry of the virus.

GENERAL COMMENT

Syphilis, tuberculosis, leprosy and, in fact, any of the better known granulomatous diseases seem to be excluded in consideration of these cases.

A clinical consideration of our two cases leaves little doubt that they belong to the group of lymphoblastomatous diseases, yet they can only with difficulty be placed definitely in subgroups under this heading, because they bear none of the classic clinical and histopathologic characteristics of any one disease. In our opinion, they favor the view that this entire group is closely related genetically, and that it contributes to confusion rather than to clarification to insist on sharp division at all times. A generic term including this entire group seems desirable. Although on etymologic grounds there may be objections to the generic name "lymphoblastoma," it can answer the purpose for which it is intended, at least until more is known in regard to the etiologic factors.

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12. Kren, Otto: Ein Beitrag zur Lymphogranulomatosis, Arch. f. Dermat. u. Syph. **130**:549, 1921.

13. Dössekker, W.: Zur Kenntnis der Haut-Lymphogranulomatose, Arch. f. Dermat. u. Syph. **126**:596, 1919.

SUMMARY AND CONCLUSIONS

Two unusual cases of lymphoblastoma with markedly varied clinical manifestations are reported. Clinically, the first case might have been considered an example of mycosis fungoides, but histologically, it suggested lymphosarcoma. In our experience, the malignant and destructive infiltration of the epidermis by immature cells of the lymphocytic series was unique. If the assumption that mycosis fungoides may develop into lymphosarcoma is permissible, the case would be fairly well explained. It at least may be classified as a lymphoblastoma, primary in the skin. The second case, although out of the ordinary, is probably best classified as Hodgkin's disease. It resembles others reported in the literature so closely that they may be looked on as one of a special group of diseases. The two cases illustrate the difficulty of diagnosing many cases according to the accepted classification. They emphasize the probable close genetic relationship of the entire group. Although there may be objections to the term lymphoblastoma, it can answer the purpose until a more correct and possibly more generally acceptable term has been devised.

PAGET'S DISEASE OF THE GLANS PENIS

WITH CENTRAL CARCINOMATOUS DEGENERATION *

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Extramammary Paget's disease associated with carcinoma of the skin has been reported many times. Authors and discussors of the cases have usually held that the carcinoma is glandular, arising in the epithelium of the sudoriferous or sebaceous glands. We shall report a case of extramammary Paget's disease in which there was a central carcinoma of the epidermoid, individual cell, keratinizing type, and we shall sum up some of the evidence in an effort to show Paget's disease as a true precancerous lesion. This disease is a response to carcinogenic agents, that is, it is a definite lesion, which is one stage in the progressive evolution of normal skin to true carcinoma.

REPORT OF CASE

History.—E. B., a colored man, aged 46, single, presented himself at the skin clinic of the Mercy Hospital, on March 8, 1929, with a lesion on the dorsal surface of the glans penis.

He said that the lesion had been present for three years with slight tenderness, and that it had begun as a small pea-sized spot and gradually increased in size. Intravenous and topical medication had been administered in several clinics without effect on the lesion.

Examination.—A circular ulcer 3 cm. in diameter involved almost the entire dorsal surface of the glans and extended onto the parietal surface of the prepuce. It was sharply marginated, without a pearly or raised border, and the skin immediately adjacent to the lesion was apparently normal. The base of the ulcer was a bright cherry red, raw and finely granular, without pus, crust or scale over it, and it was only about 0.5 mm. below the level of the normal skin. A definite infiltration was limited to the base of the lesion. There was a slight serous exudate, which bled easily on manipulation. There was no associated adenopathy or other eruption.

General physical examination showed no abnormality; urinalysis and the Wassermann and Kahn tests of the blood gave negative results. A biopsy was obtained through the glans, sulcus and prepuce. The wound healed by primary union in about ten days.

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* From the outpatient department of dermatology, the Mercy Hospital, Pittsburgh.

Fig. 1.—Structure at margins of lesion showing Paget cells; × 440.

Fig. 2.—Oil immersion photomicrograph showing mitotic figures taken from central portion; × 950.

Pathologic Report.—The report from the general pathologic laboratory was that the condition was epidermoid carcinoma, some areas showing a microscopic picture that was identical with that commonly seen in Paget's disease. The lesion was very superficial, and roentgen treatment was decided on as the best method. The lesion, with a border of normal skin 1 cm. in width, was irradiated with 1 skin unit of unfiltered roentgen rays once every four weeks until five treatments had been given. After each treatment, there was a decided improvement, and after the third, the lesion was entirely healed, leaving a thin, atrophic, depigmented patch. There had been no recurrence fourteen months after the last treatment.

Microscopic Description: The upper layers of the epidermis were absent. The most superficial layer was the prickle cell layer in which it was noted that the cells had no intracellular bridges, and there was considerable intracellular edema. Many large, oval, vacuolated cells with central small nuclei and reticulation of protoplasm leaving large clear spaces surrounding pyknotic nuclei were seen (fig. 1). An occasional mononuclear leukocyte could be seen between epidermal cells. The demarcation between the normal and the pathologic epidermis was abrupt, showing no intermediate stage. The edema extended into the normal skin for only a short distance.

In the center of the sections the degeneration of the cells had progressed to a more advanced stage in which the cells showed a more active proliferation with active cell division and many mitotic figures (fig. 2). These cells showed individual keratinization and a total absence of pearl formation. They grew in cords extending downward with destruction of the basement membrane, but without distant growth into the derma.

The derma, below the normal epidermis, showed a subpapillary edema and an infiltration of mononuclear leukocytes which also extended down along the sebaceous and sudoriferous ducts. The infiltrate became more marked in the area below the epidermis in which the Paget's cells were seen. This gave at the periphery a microscopic picture of Paget's disease that satisfied all of the microscopic criteria: (1) epithelial hypertrophy with loss of intracellular bridges in the prickle cell layer; (2) subepithelial round cell infiltration; (3) Paget's cells. Toward the center of the lesions there was a typical nest of individual cell, keratinizing, squamous cell carcinoma.

COMMENT

Our case showed a typical lesion of Paget's disease, a small, infiltrated, sharply marginated ulcer, with an intensely red, finely granular, raw surface. There was no finely rolled border as in Bowen's disease, superficial epitheliomatosis or other epitheliomas. The lesion was too sharply marginated and uniform throughout for an eczematous patch.

Microscopically, the periphery of the lesion showed a characteristic picture of Paget's [1] disease, while the center showed an area of squamous cell carcinoma.

After a review of the literature, we feel that this case substantiates the theory of the etiology of Paget's disease set forth by Durhing and

1. Paget, Sir James: Diseases of the Mammary Areola Preceding Cancer of the Mammary Gland, St. Barth. Hosp. Rep. **10**:87, 1874.

Wile,[2] and more recently by Kilgore,[3] which is that Paget's disease represents one response of epidermal tissue to certain stimuli, the continuation of which may result in deep carcinoma, as in Paget's disease of the nipple, or in epidermal carcinoma in extramammary cases.

Our case seems to fit in as an intermediate step in the process: there was an extramammary lesion of three years' duration which showed at the periphery typical Paget's disease, while the center, presumably after being subjected to more intense or longer stimulation, had passed from the original precancerous Paget's disease to the true carcinoma. Kilgore reported a case of squamous cell cancer of the lip around the border of which typical Paget's cells were seen; however, the other features of Paget's disease were lacking. Contrary to the opinion of Sekiguchi[4] and others, the carcinoma originates directly from the epidermis and not from the ducts of either sudoriferous or sebaceous glands.

In his discussion of a paper by Wise,[5] Pusey asserted that Paget's disease is a definite, primary clinical entity and not secondary to underlying carcinoma. After the study of many cases with special large sections made in serial through the whole breast in the long axis of the main ducts, Cheatle[6] felt that carcinoma of the breast and Paget's disease of the nipple were independent responses to the same stimulus.

Kilgore cited a case studied by him, with complete serial microscopic sections, in which there was definite Paget's disease of the nipple, and carcinoma of the breast was not found. He expressed the belief, as did van Winiwarter[7] and others, that the Paget's cells are changed prickle cells and that the theory of Jacobeus and Muir[8] that these cells are metastatic tumor cells has not been substantiated by other careful investigators. The change in prickle cells from the normal cell to the true Paget's cell has been followed by many. Kilgore contended that

2. Duhring, L. A., and Wile, E. C.: On the Pathology of Paget's Disease, Am. J. M. Sc. **88**:141, 1884.

3. Kilgore, Alson R.: Is Paget's Disease Primary or Secondary to Carcinoma of Underlying Breast, Arch. Surg. **3**:324 (July) 1921.

4. Sekiguchi, S.: Studies of Paget's Disease of the Nipple: Its Extramammary Occurrence, Am. J. Surg. **65**:175, 1917.

5. Wise, Fred: Multiple Superficial Benign Epithelioma of the Skin, Arch. Dermat. & Syph. **19**:1 (Jan.) 1929.

6. Cheatle, George L.: Paget's Disease of the Nipple, Brit. J. Surg. **12**:284, 1924.

7. van Winiwarter, Hans: Ueber Pagetsche Krankheit, Arch. f. Dermat. u. Syph. **85**:239, 1907.

8. Muir, R.: Paget's Disease of the Nipple and Its Relationships, J. Path. & Bact. **30**:451, 1927.

Paget's cells do not resemble, either morphologically or in their behavior, cells of carcinoma arising in the breast or skin.

Paget, Block (quoted by Wise [5]), Pautrier,[9] Montgomery,[10] Crocker,[11] and Hartzell,[12] agree that Paget's disease may occur in extramammary tissue, although some writers still doubt this. Hartzell reviewed the literature on extramammary cases and showed that the majority of such cases are seen on the glans penis and other similar epithelial surfaces. Jopson and Speece [13] summed up the apparent consensus today in saying that Paget's disease is "potentially malignant though lacking the usual characteristics of malignant disease."

After a careful study of the literature, and in view of the case we report, we feel that the hypothesis of Duhring and Wile, so aptly stated more recently by Jopson and Speece, fits the known facts concerning this interesting disease.

We feel that our case contradicts Sekiguchi's statement that the carcinoma developing in extramammary cases develops from the epithelium of the sudoriferous duct.

We feel that Paget's disease is a clinical entity that is potentially malignant and serves as a precursor of a malignant state. We feel that in extramammary cases roentgen therapy is indicated and that equally good results may be obtained with much less disfigurement than by radical surgical intervention; that is, epitheliomas developing in extramammary Paget's disease are as radiosensitive as other types seen on the skin and should be treated as such.

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9. Pautrier, L. M.: Paget's Disease of the Nipple, Arch. Dermat. & Syph. **17**:767 (June) 1928.

10. Montgomery, H.: Superficial Epitheliomatosis, Arch. Dermat. & Syph. **20**: 337 (Sept.) 1929.

11. Crocker, H. R.: Paget's Disease Affecting Scrotum and Penis, Tr. Path. Soc. London, 1889, vol. 40.

12. Hartzell, H. B.: Extramammary Paget's Disease, J. Cutan. Dis. **28**:379 (Aug.) 1910.

13. Jopson, John H., and Speece, John: Paget's Disease of the Nipple and Allied Conditions, Ann. Surg. **62**:212, 1915.

COMPENSABLE DISABILITY IN OCCUPATIONAL DERMATOSES *

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So many cases of disability reported to be due to sensitization to turpentine and paint have been brought to the notice of carriers of insurance that the question has become rather acute in California.

Dr. Morton Gibbons, medical director of the Industrial Accident Commission of California recently appointed a Reference Board, consisting of Harry E. Alderson, chairman, Douglas W. Montgomery and Hiram E. Miller, to formulate answers to certain questions related to cutaneous sensitization. This action was taken partly on account of a case which had recently been appealed and partly because the commission desired to have an authoritative opinion to guide them in the handling of other cases.

The case in question was that of a man who had worked as a painter for six years before having any skin trouble. At the end of that time he developed severe dermatitis venenata of the parts exposed in his work. It was decided that the trouble was due to turpentine, paint and other materials to which he was exposed. The dermatitis cleared up under treatment. Subsequently he had several fresh attacks due to the same cause. He was advised to change his occupation but he did not do so. Although he recovered completely from each attack, on returning to his old work he had recurrences.

The Industrial Accident Commission decided that in this case disability ceased with the subsidence of the acute symptoms and that the susceptibility that remained was a personal idiosyncrasy of the individual and not a result of the infection (?) that caused the acute symptoms.

The applicant petitioned for a rehearing as follows:

> The Petition for Rehearing is based on two principal grounds, new evidence and the contention that the evidence introduced does not support the findings, referring particularly to the finding terminating disability, the argument being made that the susceptibility, which bars this employee from following his trade, constitutes a permanent disability, which should be rated. It is argued that this susceptibility has arisen because of long exposure to and contact in his occupation with the irritating materials.

* Submitted for publication, Jan. 12, 1931.

The stenographic report of the hearing and the following questions were submitted to the Reference Board:

1. In what sense is the first attack caused by the exposure?
2. Why do some individuals fail and others resist?
3. Is susceptibility increased by repeated exposure and failure?
4. Is susceptibility increased by age?
5. Is susceptibility increased at a greater rate by repeated exposure than by age in the absence of exposure?
6. Barring the susceptibility increased by age, is there any increase of susceptibility attributable to the attacks alone?

Our answers to these queries were as follows:

1. The dermatitis that J. E. C. developed for the first time after six years on the same job was occupational. Subsequent exposures to irritating substances produced the same kind of dermatitis, not necessarily occupational. The succeeding attacks were recurrences due to various irritants, and demonstrated that the patient possibly had a skin that was sensitized to any particular substance.

2. Some persons react more readily to irritants than others because of increased vulnerability. This may be due to idiosyncrasy or to congenital or developmental defects in the skin, to some underlying disturbance of bodily health, to bad habits or age, or all of them combined. Any injury to or disease of the skin may so weaken the resistance of the skin that it will be more susceptible to subsequent irritation from any cause, and consequently each case should be considered on its own merits.

3. Susceptibility is increased by repeated overexposures, that is, exposures beyond the individual's resistance.

4. Increased vulnerability naturally occurs with age as a result of thinning of the skin and other atrophy of its elements. Underlying bodily diseases incidental to old age may also render the skin more susceptible to injury and lessen the natural ability that a younger skin would have to recuperate.

5. This would depend on the case. Some individuals age early, others late, and this applies to the skin as well as to the general constitution.

6. There are certain substances that, having produced an eruption, have been found to increase the individual's susceptibility to succeeding exposures, but these are generally protein substances.

We feel that it is impossible to establish a precedent, or precedents, in cases like that of J. E. C. because of the variability of individuals, of substances producing irritations, and of circumstances surrounding each case.

HARRY E. ALDERSON, M.D., Chairman
DOUGLAS W. MONTGOMERY, M.D.
HIRAM E. MILLER, M.D.

Naturally this Reference Board considered the work of Bloch in which it was shown that sensitization to primrose could be produced by repeated applications of an extract from the plant. Bloch made a concentrated extract of primrose and with this preparation painted the skin of normal persons. An area on the arm measuring 4 sq. cc. was abraded

with sandpaper and then treated with this extract. "After the first and also frequently after the second and third painting a vesicular eruption appeared at the site of application." These subjects then remained hypersensitive to primrose. Bloch was one of the subjects on whom the test was made, and he became very susceptible to applications of the plant. Pusey discussed this phenomenon in his paper on the "Pathogenesis of Eczema" read at the recent Eight International Congress of Dermatology and Syphilology at Copenhagen. He observed that the evidence is strong "that the pathological X in the susceptibility to eczema from external irritants is in many if not most cases a local tissue reaction of allergic character."

Many cases of alleged sensitization to turpentine have come to my notice, but I have never seen one in which I felt that the case was fully proved. So far I have been unable to find any record of authentic cases in the literature or any reports of such experimental work with turpentine. Of course, it is well known that different turpentines vary in their local effects. A preparation made by a new process that has come into use recently has proved to be quite irritating, but I have not yet seen any dermatoses that I believed were due to acquired sensitiveness to this preparation. If sensitization to turpentine can be demonstrated, it is going to place a great financial burden on insurance companies and an enormous number of workers will be classed as "poor industrial risks."

490 Post Street.

PROGNOSTIC IMPORT OF A NEGATIVE SPINAL FLUID IN EARLY AND IN LATENT SYPHILIS *

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On the basis of the clinical and laboratory observations made on 123 patients followed over a period of years, a recent communication from this clinic [1] discussed the prognosis in early and late asymptomatic neurosyphilis from the standpoint of the development of clinical neurosyphilis. Within an observation period averaging seven years, it was found that grave and disabling forms of neurosyphilis had developed in 15 per cent of these patients, symptoms or signs permitting a tentative diagnosis of neurosyphilis had developed in an additional 30 per cent, and 4.8 per cent had died of neurosyphilis. It seemed probable that if prolonged observation were made many of the remaining patients of the original 123 would be found to be candidates for a similar fate. Reference was made to the observation of Fuchs,[2] who, on the basis of much more limited material, came to similar conclusions with regard to syphilitic patients originally having positive spinal fluids. It was pointed out, however, that such a study could not be complete without a comparative study of a group of patients showing normal cerebrospinal fluids at the original examination.

As a supplement to the work of Fuchs, in 1926, Schmidt,[3] from Dreyfuss' Clinic, reported the end-results in a series of 155 cases of syphilis originally showing negative spinal fluids which were followed over periods of time up to five years. Seventy-one of his patients had latent syphilis, 27 had tabes, and 57 had other forms of neurosyphilis. Of the 71 patients with latent syphilis, 25 were reexamined

* Submitted for publication, Oct. 17, 1930.

* From the Syphilis Division of the Medical Clinic, the Johns Hopkins University and Hospital.

* This investigation was supported by a grant from the Committee on Research in Syphilis, Inc.

1. Moore, J. E., and Hopkins, H. H.: Asymptomatic Neurosyphilis: VI. The Prognosis of Early and Late Asymptomatic Neurosyphilis, J. A. M. A. **95:** 1637 (Nov. 29) 1930.

2. Fuchs, L.: Ueber die prognostische Bedeutung positiven Liquors bei spatlatenter Syphilis ohne neurologischer Befund, Deutsche Ztschr. f. Nervenh. **75:**70, 1922.

3. Schmidt, R.: Ueber die prognostische Bedeutung primärnegativen Liquors bei Syphilis, Deutsche Ztschr. f. Nervenh. **91:**128, 1926.

clinically and in 8 spinal punctures were again made. In no instance did a negative spinal fluid relapse to positive, nor did a single patient show any clinical evidence of progress of the disease in the central nervous system. Likewise, Brandt and Mras [4] performed a second spinal puncture on 45 patients whose fluids were originally normal, with negative results. On the other hand, Pappenheim [5] expressed the opinion, without citing actual instances observed, that it is not unusual for patients with normal spinal fluids in advanced latency to develop metasyphilis later, and Meyerbach [6] reported one such case. The spinal fluid of her patient was entirely normal three years after infection. Five years later, dementia paralytica with typical serologic changes developed. This report is the only one of its kind that we have found in a thorough survey of the literature.

We observed 405 patients over periods ranging from two to ten years who were admitted to the clinic with the diagnosis of early or latent syphilis, and who at the time of the first spinal puncture had normal spinal fluids. The group was comprised of 161 patients with early syphilis (primary or secondary) on whom spinal puncture was first performed within the first year of the disease; and of 244 patients with latent syphilis who when the first puncture was performed had had the infection for periods varying from one to forty-five years. Some of the patients were adequately treated, while others received little or no treatment. Most of the 405 patients were reexamined clinically one or more times, and on 122, or 30 per cent, spinal puncture was repeated one or more times. No patients with evidence of neurosyphilis on admission were included in this study.

The following results show the prognostic value of a negative cerebrospinal fluid in cases of early and latent syphilis: In the total of 405 cases, 390 patients, or 96.3 per cent, remained normal; syphilis of the central nervous system developed in 10, or 2.4 per cent, and the status of 5, or 1.2 per cent, remained questionable.

A definite difference was noted between the behavior of patients having a normal fluid during the early period of syphilis and that of patients having an originally normal fluid during the advanced latent period of the disease.

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4. Brandt, R., and Mras, F.: Latent Lues und Liquorveränderungen. Untersuchungen an Prostitutierten, Arch. f. Dermat. u. Syph. **134**:171, 1921.

5. Pappenheim, M.: Ueber die Veränderungen des Liquor cerebrospinalis bei der nicht-nervösen Lues und über ihre prognostische Bedeutung, Arch. f. Dermat. u. Syph. **144**:117, 1923.

6. Meyerbach, A.: Hundert und Vierzig Katamestisch verfolgte Leutiker mit positivem Blut und negativem Liquorwassermann, Ztschr. f. d. ges. Neurol. u. Psychiat. **67**:245, 1921.

The outcome as to neurosyphilis in cases of early (primary and secondary) syphilis in patients whose cerebrospinal fluids were originally negative was as follows: Of a total of 100 cases in which spinal puncture was performed only once, indubitable syphilis of the central nervous system developed in 2; 97 remained free from clinical evidence of the disease and questionable clinical signs developed in 1. Of the total of 61 cases in which spinal puncture was repeated one or more times, the cerebrospinal fluid remained normal in 59; indubitable syphilis of the central nervous system developed in 4 of these cases; 54 remained free from clinical evidence of the disease, and questionable clinical signs developed in 1; in the 2 cases in which the cerebrospinal fluid became abnormal, indubitable syphilis of the central nervous system developed. In the 6 instances in which indubitable syphilis of the central nervous system developed, the neurosyphilis was of the neurorecurrent type, following shortly after a lapse in treatment. Of the total 161 cases, syphilis of the central nervous system developed in 8, or 5 per cent; 151, or 93 per cent, remained normal, and questionable signs developed in 2, or 1 per cent.

The outcome as to neurosyphilis in patients with latent syphilis with originally negative cerebrospinal fluids was as follows: Of a total of 183 cases in which spinal puncture was not repeated, indubitable syphilis of the central nervous system developed in 1, and 182 remained free from clinical evidence of the disease. Of a total of 61 cases in which spinal puncture was repeated one or more times, indubitable syphilis of the central nervous system developed in 1, 57 remained free from clinical evidence of the disease and questionable clinical signs developed in 3. In all of these cases, the cerebrospinal fluid remained normal. Of the entire group of 244 cases, syphilis of the central nervous system developed in 2, or 0.8 per cent; 239, or 97 per cent, remained normal and questionable signs developed in 3, or 1.2 per cent. Clinical or serologic evidence of neurosyphilis developed in 8, or 5 per cent, of 161 patients admitted with early syphilis, while this occurred in only 2, or 0.8 per cent, of those in the latent group. The spinal fluid in 2 of the 61 patients in the early group on whom spinal puncture was repeated had become abnormal. The spinal fluids of the 61 patients in the latent series on whom spinal puncture was repeated did not show any changes.

In striking contrast to the series of patients whose spinal fluids were originally positive, the instances of neurosyphilis observed in the series whose spinal fluids were originally negative were of a relatively mild form. Not a single case of parenchymatous neurosyphilis (dementia paralytica and tabes) developed. This fact adds another link to the chain of evidence indicating that the foundation of parenchymatous

neurosyphilis is laid in the early stages of the infection in almost 100 per cent of the cases. Lesions of the cranial nerves constituted the only evidence of invasion of the neuraxis in the entire 405 cases, although syphilitic epilepsy subsequently developed in 1 patient following a neurorecurrence involving the seventh nerve.

To summarize these observations in a slightly different fashion, in only 8 of 161 patients with early syphilis, and in 2 of 244 patients with latent syphilis, whose spinal fluids were found to be negative at the first examination, did neurosyphilis subsequently develop. In the group with early syphilis, involvement of the neuraxis was usually of the diagnostically inescapable neurorecurrent type, and in only 2 of the 8 did the spinal fluid become positive concomitant with the clinical relapse. In not a single instance in the group with latent syphilis was a negative cerebrospinal fluid subsequently found to have become positive. This seems to indicate that the liability of grave forms of neurosyphilis to develop in patients having negative cerebrospinal fluids early in the infection or in latency is very small, and that if this does occur, it will be more obvious on clinical than on laboratory grounds.

In the two instances in this series in which a negative cerebrospinal fluid was subsequently found to have become positive, there had been a definite mucocutaneous relapse of a secondary type or a positive Wassermann reaction of the blood in the interval between the two punctures. This is illustrated by the following case:

REPORT OF A CASE

A white woman, aged 43, was admitted to the clinic on Jan. 14, 1926, with generalized secondary syphilis. The Wassermann reaction of the blood was positive. Courses of neoarsphenamine alternating with courses of mercury were given continuously until April 12, 1927. The lesions healed after the first injection, and the Wassermann reaction of the blood became and remained negative after the third injection. The spinal fluid was found to be normal on May 2, 1927. The patient was placed on probation and returned for observation and blood tests eleven times between April 19, 1927, and April 9, 1929. Several times during this period the Wassermann reaction of the blood showed slight fixation by the icebox method. On April 9, 1929, it had relapsed to complete positivity. On account of this, the patient was reexamined and reexamination of the spinal fluid was made. Typical, nodular, ulcerative skin lesions were discovered, and, associated with this relapse, the spinal fluid had become positive. The spinal fluid contained 18 lymphocytes, the reaction of the Pandy test was ++, the Wassermann reaction was positive, with 0.1 cc. of fluid, and the mastic read 4432100000. Antisyphilitic therapy was again instituted.

Added weight is thus given to the statement made by one of us in an earlier publication,[7] that in the majority of cases of neurosyphilis inva-

7. Moore, J. E.: The Genesis of Neurosyphilis, Arch. Dermat. & Syph. **4**:55 (July) 1921.

sion of the central nervous system takes place during the first few months of infection; but in a very few instances it may occur at any time during the course of syphilis by direct extension from an adjacent syphilitic focus, such as periostitis of the skull, or during a second period of generalization of the disease, which is practically always detectable by symptoms of a clinical relapse or by a positive Wassermann reaction of the blood.

In no patient in whom the duration of infection was known was invasion of the neuraxis observed to occur after the fifth year of the disease. Such an occurrence is extremely rare.

It follows from these observations that in a patient whose spinal fluid is normal during the first year of infection and who suffers no clinical or serologic relapse, neurosyphilis rarely develops; that if it does, the type of involvement is likely to be neurorecurrent, usually mild and comparatively innocuous, and rarely if ever leading to subsequent parenchymatous neurosyphilis; and that in the patient with latent syphilis whose spinal fluid is found to be normal after the fifth year of the disease, neurosyphilis practically never develops.

SUMMARY

1. Of 405 patients with early and latent syphilis whose spinal fluids were normal at the first examination, definite neurosyphilis developed in 2.4 per cent, and questionable neurosyphilis in an additional 1.2 per cent, whereas 96 per cent remained well, over periods ranging from two to ten years. This is contrasted with 15 per cent of definite and 30 per cent of questionable cases of clinical neurosyphilis which developed in a series of patients with early or late asymptomatic neurosyphilis.

2. The types of neurosyphilis observed were relatively mild, being confined to lesions of the cranial nerves, with the exception of one patient in whom syphilitic epilepsy developed. No instances of parenchymatous neurosyphilis were observed.

3. The excellent prognostic import of the originally negative spinal fluid is in striking contrast with that of the originally positive spinal fluid.

4. Late neurosyphilis rarely develops in patients with a normal spinal fluid in early syphilis, unless they undergo a subsequent clinical or serologic relapse.

5. In patients with latent syphilis and a normal spinal fluid, neurosyphilis in any form rarely, if ever, develops.

TREATMENT OF SUPERFICIAL FUNGUS INFECTIONS WITH THE LONG WAVELENGTH ROENTGEN RAYS (GRENZ RAYS) *

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AND
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CHICAGO

Research in the superficial cutaneous mycoses has been directed largely toward the finer etiologic aspects, the types of fungi and other factors. Treatment has not received the attention merited by its importance. The refractiveness of the superficial cutaneous mycoses to various forms of treatment in certain individuals is well known. This study was pursued for the purpose of evaluating the therapeutic possibilities of the so-called grenz rays.

REVIEW OF THE LITERATURE

In 1925, Bucky [1] revived interest in the therapeutic possibilities of the long wavelength roentgen rays. This interest had remained dormant since 1910, when Schultz,[2] who had been actively engaged in the development of this ray, died suddenly. In 1896, Schott [3] produced a glass composition of silicoborate and alumina that had a low atomic weight and was capable of transmitting roentgen rays of extremely long wavelengths. Various workers using this composition as a basis continued this research with the final development of a lithium borate glass which is now known as Lindemann glass and which forms the window of the tube used in the long wavelength roentgen ray machine.

The rays known as grenz, "w," supersoft, borderline, frontier, infra-roentgen and long wavelength x-rays, are roentgen rays of extremely long wavelengths and large absorption coefficients. Their wavelengths

* Submitted for publication, Jan. 23, 1931.

* From the Departments of Physiotherapy and Dermatology of Northwestern University Medical School.

* The expenses of the fungus cultures were defrayed by Therapeutic Grant No. 143 of the American Medical Association.

1. Bucky, G.: Reine Oberflächlentherapie mit überweichen Roentgenstrahlen, München. med. Wchnschr. **72**:802 (May 15) 1925.

2. Schultz, F.: X-Ray Treatment of Skin Diseases, New York, Rebman Company, 1910, pp. 61, 81, 82 and 92.

3. Schott, quoted by Kaye, G. W. C.: X-Rays, ed. 2, New York, Longmans, Green & Company, 1917, p. 171.

average 2 angstrom units. These, in comparison with the wavelengths and absorption coefficients of the rays generally employed in superficial roentgen ray therapy, have such a low degree of penetrative power that through an average thickness of human or animal skin there is transmitted a comparatively small percentage of the incident radiative intensity.

The position of these rays in the spectrum singles them out as roentgen rays. They have the properties known to be possessed by the rays ordinarily used in skin therapy, except that their absorption coefficients are high because of the low voltage used on the electrons of the tube. There have been and still are divergent opinions regarding the status of these rays. Bucky relegates these rays to a special place in the spectrum between the short ultraviolet and the roentgen rays, calling them grenz or borderline rays. Failla [4] said that electromagnetic vibrations of 2 angstroms in wavelength fall well within the range of roentgen rays and that they possess all the physical characteristics of ordinary roentgen rays.

The tube generally employed is a modified Coolidge tube of the hot cathode vacuum type with a Lindemann glass window. It is a small closed tube entirely surrounded by a metal casing with the exception of the Lindemann glass window. The tube is water cooled and has a conical anode composed of chromium iron. The negative pole is grounded, and is, therefore, unipolar. The surface of the tube, being comparatively large, prevents it from becoming hot, thus making it self-rectifying. The tube is activated by means of a special transformer limited to a maximum of 12 kv. and 10 ma.

Long wavelength roentgen rays are interesting because of the therapeutic possibilities they offer in the dermatologic field. They differ from the short wave roentgen rays in that they (*a*) produce erythema more rapidly, (*b*) give greater pigmentation, (*c*) do not epilate, (*d*) do not penetrate so deeply and (*e*) cause an early drop in the leukocyte count which rapidly returns to normal. They resemble the short waves of the roentgen ray in that they may produce (*a*) latent erythema, (*b*) pain after marked erythema and (*c*) cumulative effects. The latter factor (*c*) is still questionable in view of the fact that sequelae thus far have been uncommon and but a few cases of mild atrophy and telangectasia have been reported following maximal doses.

It can be said that this type of therapy is much safer than therapy with the shorter wavelengths, but sufficient time has not elapsed and too few patients have been treated to determine the possibility of sequelae or the dangers resulting from repeated doses, large or small, over a considerable period of time.

4. Failla, G., quoted by Lerner, C.: Physical Therap. **46**:567 (Dec.) 1928.

The literature relative to results from this form of therapy is rather scant and comes from comparatively few workers. Most of the workers have employed maximal doses to obtain favorable results, whereas fractional dosage has been used little, if at all. Practically every dermatologic entity, with few exceptions, has been treated by this method by the different workers, with varying results, and the impression one gains is that in many instances enthusiasm and overconfidence have biased the results, while in other instances prudence and ultraconservatism have prejudiced the results. The number of cases of each condition in which treatment has been given has been too small to warrant any definite conclusions.

Pusey,[5] in discussing the paper of Eller and Bucky relative to the results they obtained in the treatment of epithelioma of the eyelids, felt that by successive exposures an epithelioma was destroyed layer by layer, each successive destruction being limited by the penetration of the rays. This opinion is substantiated by the work of Herxheimer and Uhlmann [6] who performed histologic examinations in a series of cases in which the patients were treated with these rays, and demonstrated that the effect was limited to the epidermis and did not involve the cutis. The changes reported by them occurred following small doses of the rays which, nevertheless, completely sufficed to produce therapeutic effects. In the end the small doses reach the deeper layers of the skin by routine radiation. Herxheimer and Uhlmann decided that in this manner they could determine the practical boundaries of the application of this kind of ray. Small doses of the rays are indicated for all epidermic processes and all dermatoses in which changes in the epidermis prevail. For deeper structures they are irrational and superfluous, as there is a better remedy at our disposal in the routine therapy with roentgen rays.

MATERIALS AND TECHNIC

In our investigation we employed a special generator for long wavelength roentgen rays, designed by the General Electric X-ray Corporation, which delivered a maximum of 12 kv. and 12 ma. and which was used to activate a specially constructed modified Coolidge tube, made by Mueller of Berlin, with the Lindemann glass window situated on the under surface of the tube.

With this particular apparatus we were able to produce a mild red blush on the flexor surface of the forearm in a young brunette adult within twenty-four hours, employing the following factors: 8 kv., 6 ma., 3 inch tube distance and one minute exposure.

5. Pusey, W. A., in discussion of Eller, G. G., and Bucky, G.: Use of the "Grenz" (Infra-Roentgen) Rays in Dermatologic Conditions, Arch. Dermat. & Syph. **27**:221 (Feb.) 1928.

6. Herxheimer, K., and Uhlmann, E.: Arch. f. Dermat. u. Syph. **157**:467, 1929; abstr., Arch. Physical Therapy **11**:255 (May) 1930.

In view of the fact that these long wavelength roentgen rays, like all soft rays, are absorbed by air, the tube must be placed close to the skin. The necessity of maintaining an accurate and invariable measurement of the distance of the tube from the skin, is of great importance because the possibility of error is much greater in measuring these short distances than it is in measuring the longer distances employed in the use of the shorter rays. In order to insure an absolutely accurate distance in all our treatments, a simple gage was constructed. It consisted of a piece of aluminum measuring 3 by 4 inches, shaped to fit snugly to the bottom of the metal casing of the tube, and to the center of this was attached a small wooden rod, the tip of which measured 3 inches from the center of the tube. In all our treatments the distance of the tube from the skin was measured by means of this gage.

Having determined the erythema dose with our particular apparatus, (8 kv., 6 ma., 3 inches, one minute), we decided to use the fractional method of treatment, adopting one erythema dose as a working unit with treatments divided into one-quarter units or fractions thereof, given at weekly intervals and four treatments constituting a series. This method of procedure was decided on in view of the fact that we had limited our work to the treatment of the superficial fungus infections, using such fractional doses at weekly intervals, so that there could hardly be any question as to the safety of the dosage. In cases in which large areas were involved, requiring repeated focusing at each treatment, the dosage was reduced one-half. In several instances, as in the treatment of the nails, the dose at each treatment was doubled. These several variations in dosage are noted in the table.

In several of our patients, a single one-quarter unit exposure provoked a reaction which was manifested by an aggravation of the original lesions. In most instances these reactions subsided spontaneously within forty-eight hours with a resultant improvement in the lesions. In one instance (case 17), the reaction occurred after a second treatment, the first treatment having apparently improved the condition; this case is described in detail in another section of this paper. As the dosage employed in the treatment of all these patients was identical, it would seem that the reactions induced were the results of individual tolerance.

In several instances, following a series of treatments, there were recurrences of the original lesions. These were always milder than the original condition and responded promptly, as a rule, to the one or two additional treatments.

COMMENT

In the course of our investigation, we treated forty patients, but this report involves only thirty, ten having disappeared from observation. Early in our investigation, the clinical diagnosis of superficial fungus infection was considered sufficient indication for this type of therapy, and the first patient treated showed a marked improvement within a week after the first treatment was given. The next three patients showed no improvement whatever, even after three treatments. A complete check-up of our apparatus at this time revealed the fact that our machine was functioning properly. It was apparent, then, that we were facing the same problem that we had encountered with the other forms of treatment, namely, the refractiveness of these fungus infec-

tions to treatment. At this point in our investigation we decided on the routine smears (potassium hydroxide) and cultures (Sabouraud's dextrose mediums) in every case presented for treatment. As a result of this routine examination, we soon learned that the cases that were positive for *Monilia* and yeastlike fungi responded most rapidly, and in almost every instance of this particular variety good results were obtained. Several illustrative reports of cases are herewith given and a complete report of all cases in which treatment was given appears in the table.

REPORT OF CASES

CASE 1 (case 31 in the table).—S. S., a white man, aged 32, was first seen on July 9, 1930. For the past five years he had had an itching eruption in the genitocrural region which partially improved at times under treatment but never was entirely cleared. Examination revealed a sharply defined, brownish-red patch involving the genitocrural region; the borders were somewhat elevated, infiltrated and polycyclic. Smears and cultures were positive for a yeastlike fungus. On July 12, he was given a single one-quarter unit (one-quarter erythema dose) to each area. One week later the lesions had involuted and the eruption faded to a considerable degree. This patient was not seen again until October 18, at which time an examination revealed no evidence of any lesions present. He stated that the eruptions and the attending symptoms had disappeared within two weeks after treatment.

CASE 2 (case 20 in the table).—Mrs. M. M., an American housewife, aged 59, had interdigital erosions on each hand in the third interspace for three years; the erosions were accompanied by considerable burning, especially after the use of soap and water. She said that she had suffered a previous attack about thirty years before, which cleared up in four months without treatment. She had done ordinary housework at her home, but no laundry work. The clinical diagnosis of erosio interdigitalis saccharomycetica was made. The potassium hydroxide preparations, however, revealed large, branching hyphae, but cultures were negative. Four one-quarter unit treatments at weekly intervals were given to one area, while the other area was used as a control. There was no improvement in this case from this treatment.[7]

CASE 3 (case 17 in the table).—A chauffeur, aged 38, white, married, was first seen on July 3, 1929, showing an eruption involving the entire face, the forehead, neck, palms, hands, wrists, antecubital spaces and the dorsal surfaces of the feet. Because of this condition, he had been able to follow his occupation for a period of only six weeks in the course of the past two years. Smears and cultures were made from all the involved areas. The potassium hydroxide preparations all showed yeastlike fungi, while the cultures were all negative. Previous treatment had been purely local. Treatment was instituted and on July 31, he received one-quarter unit treatment to all areas. When the patient was seen on August 1, there was a decided improvement to all areas. On August 5, the improvement continued in all areas except the face and the palms where the lesions were somewhat aggravated. On August 7, the same treatment was repeated and the following day, August 8, there was a marked improvement, but again on August 15, the entire condition showed an acute relapse with intense

7. White, C.: Erosio Interdigitalis Mycotica (Bilateral), Arch. Dermat. & Syph. **22**:182 (July) 1930.

Cases in Which Treatment Was Given with Long Wavelength Roentgen Rays

Cases	Age	Sex	Area of Involvement	Clinical Diagnosis	Mycologic Observations Potassium Hydroxide Cultures	Treatment with Long Wavelength Roentgen Ray; Other Treatments	Clinical Results
1	24	M	Hand, feet and fingers	Occupational dermatitis with secondary infection	None made	Four treatments of one-quarter unit each	Improved
2	73	M	Dorsum, both hands and wrists	Occupational dermatitis with secondary infection	None made	Two treatments of one-quarter unit each; no improvement; moist dressings	Cleared
3	53	F	Third and fourth interdigital spaces of both hands	Erosio interdigitalis saccharomycetica	Potassium hydroxide positive for budding yeast	Three treatments of one-quarter unit each	Cleared entirely
4	22	M	Genitocrural region	Tinea cruris	None made	One treatment of one-quarter unit	Cleared entirely
5	42	F	Dorsal and lateral surfaces of the right foot; lateral surface of the middle third of left leg	Epidermomycosis	Positive for yeastlike fungi	One treatment of one-half unit to left leg Four treatments of one-quarter unit each to right foot	Cleared Markedly improved; did not return
6	42	F	Dorsum of hands; lateral surfaces of the left forearm; inframammary region of chest; feet	Epidermomycosis	Feet—potassium hydroxide and culture positive for yeastlike fungi; repeated potassium hydroxide and cultures from all other areas negative for fungi	Dorsum of hands cleared entirely after two treatments one-quarter unit each; all other areas received one-quarter unit	Did not return
7	42	F	Inner aspect of both ankles; area below left knee	Epidermomycosis	Potassium hydroxide positive for yeastlike fungi; cultures negative	Left foot four treatments one-quarter unit; right foot five treatments one-quarter unit; knee three treatments one-quarter unit	Marked improvement
8	44	F	Plantar surface of left foot	Epidermomycosis	Potassium hydroxide positive for yeastlike fungi; cultures negative	Two treatments one-quarter unit each	All cleared
9	28	M	Both feet and the toes	Epidermomycosis	Potassium hydroxide and cultures positive for yeastlike fungi	Two treatments one-quarter unit each	Markedly improved
10	21	F	Both hands	Epidermomycosis	Potassium hydroxide, long hyphae, culture T. gypseum	Four treatments one-quarter unit each; patient left town, returned with recurrence	Improvement slow
11	27	M	All toes and plantar surface of left foot	Epidermomycosis	Potassium hydroxide and cultures positive for yeastlike fungi (Monilia)	One treatment of one-quarter unit to plantar surface of the left foot	Improved
12	12	M	Right antecubital fossa; dorsum of both hands; behind the ears	Cryptococcus epidermica	Potassium hydroxide and cultures negative for hyphae	Four treatments one-quarter unit to all areas	Improved; mild recurrence
13	11	M	Scalp, face, chest, arms, forearms, ears	Superficial yeast dermatitis	Potassium hydroxide back of ears positive for yeastlike fungi; cultures from face and scalp grew Monilia (resembling ringworm clinically)	Two treatments one-quarter unit each, to right and left sides scalp; four treatments, one-quarter unit, right side of face; two treatments, one-quarter unit each to left side of face; three treatments, one-half unit each, to both arms and forearms	Entirely cleared; mild recurrence later
14	12	M	Lesions on forearms	Seborrheic dermatitis (yeast type ?)	No cultures made	Two treatments one-half unit each to right forearm	Improved

15	15	M	Dorsal surfaces of both hands; extensor and flexor surfaces of both wrists; lesions on both eyelids	Epidermomycosis (yeast)	Potassium hydroxide and cultures positive for yeastlike fungi	Four treatments one-quarter unit each to all areas; recurrence; two treatments one-quarter unit each; two treatments one-quarter unit each; two treatments one-eighth unit each	Cleared Cleared Cleared
16	16	M	Both hands and feet	Epidermomycosis (yeast)	Potassium hydroxide; no hyphae; cultures contaminated	Two treatments one-quarter unit to all areas; recurrence five months later	Cleared
17	38	M	Face, forehead, neck, palms, dorsum of feet, both antecubital spaces	Epidermomycosis (yeast)	Potassium hydroxide positive for yeastlike fungi; cultures negative	Four treatments one-quarter unit to all areas; six treatments one-eighth unit to all areas	Entirely cleared
18	30	F	Forearms, arms and hands; 7 years' duration	Cryptococcus epidermica	Potassium hydroxide and cultures all positive for yeastlike fungi	Six treatments one-quarter unit each to all areas	Marked improvement; mild relapse
19	26	M	Both forearms and hands	Cryptococcus epidermica	Potassium hydroxide positive for yeastlike fungi; cultures contaminated	Seven treatments one-quarter unit each to areas (several areas were not treated at first; used as a control)	Entirely cleared
20	50	F	Interdigital erosions, third interspace each hand	Erosio interdigitalis mycotica	Potassium hydroxide showed large branching hyphae; cultures negative	Four treatments one-quarter unit each to one area; other area used as control	No improvement
21	53	F	Right and left ring fingers and left index finger; nails of fingers involved	Mycotic onychia and paronychia and secondary pus infection	Cultures from nails showed yeastlike fungi	Six treatments one-quarter unit each to all areas; received much other treatment	Vast improvement but had other forms of treatment
22	51	F	Nails of toes and fingers bilateral	Onychomycosis (yeast type)	Potassium hydroxide positive for hyphae and budding yeast; cultures positive for monilia	Four treatments one-half unit each to all areas	Improved
23	25	F	Fingers of right hand, right forearm, neck and face	Epidermomycosis (yeast type)	Cultures positive for yeastlike fungus	Two treatments one-half unit each to all areas	Marked improvement
24	24	M	Fingers and toes bilateral	Epidermomycosis (hyphomycetica)	Potassium hydroxide; mosaic forms found on third attempt	One treatment one-quarter unit to all areas	No improvement
25	25	M	Dorsal surfaces both hands; both large toes	Epidermomycosis (yeast type)	Potassium hydroxide from all areas revealed yeastlike fungi	Three treatments one-quarter unit each to all areas; six treatments one-eighth unit each to all areas	Entirely cleared
29	48	M	Dorsal surfaces both hands; both forearms; both shoulders; right side of neck; left leg and foot	Epidermomycosis (hyphomycetica)	Potassium hydroxide positive for hyphae	One-half unit to dorsum of each hand; much other treatment	Improved finally
30	28	F	Genitocrural regions	Tinea cruris	Potassium hydroxide and cultures positive for yeastlike fungus	Two treatments one-quarter unit each; one treatment one-half unit	Entirely cleared
31	32	M	Genitocrural regions; 5 years' duration	Tinea cruris	Potassium hydroxide and cultures positive for yeastlike fungus	One treatment one-quarter unit to all areas	Entirely cleared
32	27	M	Genitocrural regions	Tinea cruris	Potassium hydroxide and cultures positive for yeastlike fungi	One treatment one-quarter unit to all areas	Entirely cleared
33	22	M	Fingers and thumbs of both hands	Occupational dermatitis with secondary mycotic infection	Potassium hydroxide and cultures positive for yeastlike fungus	Five treatments one-quarter unit each to all areas; had much other treatment previously	Entirely cleared

Note: The term yeastlike fungi is better than Cryptococcus or Monilia because research work has demonstrated that the yeast forms will also grow mycelia by certain changes in the mediums.

itching. On September 5, a mild attack of appendicitis developed and all treatment was suspended. On September 19, the patient returned and treatment was again instituted. He was given two one-quarter unit treatments to all areas at weekly intervals with continued marked improvement and then six treatments of one-eighth unit at weekly intervals, at the end of which time there was no trace of the skin condition to be seen and the patient was discharged as cured.

CASE 4 (case 13 in the table).—A colored boy, 11 years of age, was referred by Dr. Clark W. Finnerud from his clinic at the Cook County Hospital. There was a history of profuse scaly itching eruption all over the scalp, back of the ears, and on the chest and the arms. This condition had been present for more than one year and was referred with the diagnosis of seborrheic dermatitis due to yeastlike fungi. Potassium hydroxide and cultures of hairs and scales were repeatedly negative for *Microsporon* and *Trichophyton*. Potassium hydroxide preparations of lesions from behind the ears, and from the face and the scalp revealed the presence of budding yeast. On Dec. 21, 1929, one-quarter unit long wavelength roentgen ray was given to the posterior left quadrant of the scalp. One week later there was no improvement and another one-quarter unit was given. Two weeks later there was a decided improvement and a one-quarter unit was given to the left anterior quadrant; one-quarter unit was also given to the right side of the face. Treated areas on the left side of the scalp were all cleared up and treatment was given to the right side of scalp. Progress was now very rapid. The total treatments given were two of one-quarter unit each to the right and left sides of the scalp; four of one-quarter unit to the right side of the face; two of one-quarter unit to the left side of the face; three of one-half unit to the arms and the forearms. On May 26, the entire condition was cleared up. On September 24, there was a slight recurrence on the right upper eyelid and the right cheek. Treatment is being repeated.

All these patients were followed for a sufficiently long period apparently to determine the clinical value of the grenz ray.

SUMMARY

An attempt has been made to evaluate the so-called grenz ray in the treatment of superficial fungus infections of the skin. By the use of fractional doses good results were obtained in the patients who had infections due to yeastlike fungi, while the infections of hyphomycetic origin showed very little if any improvement.

It is realized that this series is only sufficiently large to give suggestive, not conclusive, results. The investigation is being continued.

ACUTE DERMATITIS DUE TO OPIUM PREPARATIONS *

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The list of irritants responsible for recurrent attacks of acute dermatitis has been so rapidly extended within the last decade that one must be constantly alert for well recognized and new irritating substances whenever a case of dermatitis is seen.

Hazen,[1] in discussing various dermatoses caused by irritants, did not mention opium or any of the preparations derived from it. Weber,[2] in an exhaustive list of cutaneous irritants, included morphine, but did not mention preparations of opium.

The following case is reported because the dermatitis followed the use of opium, both externally and internally. The clinical observations were corroborated both by the patch test and by the results of experimental internal administration.

REPORT OF CASE

L. P., a boy, aged 6 years, was treated for a local superficial infection around the scrotum. The attending physician at first used solution of aluminum acetate, but because there was no improvement he prescribed wet dressings of lead and opium wash. Within a week after its use, an acute, pruritic, papulovesicular eruption appeared on the face, neck, chest, abdomen, back and legs. On removal of the lead and opium wash and with local use of soothing applications, the rash cleared up. Four weeks later, the patient was given a proprietary medicine for a cough. This was promptly followed by a similar eruption, which again cleared up after the cause was removed.

The patient was then tested with all the preparations that were prescribed during his illness. Patch tests were performed with the following preparations: solution of aluminum acetate, lead and opium wash, acetylsalicylic acid, quinine, the proprietary medicine and powdered opium. Within twenty-four hours, there was a definite papulovesicular eruption at the areas where the three preparations of opium had been applied, with the most marked reaction where the powdered opium had been applied. To see what the internal use of opium had to do with the eruption that followed the use of the proprietary medicine, the patient was again given the same medication internally; this was promptly followed by the appearance of a fine, pruritic rash.

31 Lincoln Park.

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* Submitted for publication, Feb. 16, 1931.

1. Hazen, H. H.: Allergic Dermatoses, Arch. Dermat. & Syph. **18**:121 (July) 1928.

2. Weber, Leonard F.: A List of Cutaneous Irritants, Arch. Dermat. & Syph. **21**:761 (May) 1930.

THE CHOLESTEROL CONTENT OF THE BLOOD SERUM IN YAWS*

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During recent years quantitative chemical studies of the blood provided medical science with many important data. These studies showed themselves to be valuable in internal diseases (diabetes mellitus, nephritis) as well as in diseases of the skin (chronic eczema, furunculosis, etc.).

Later the cholesterol content of the blood was also determined in different diseases. Although in many diseases one cannot speak of a definite change in the amount of cholesterol, diseases have been recognized which show a tendency to hypercholesteremia or hypocholesteremia

Among the diseases in which hypocholesteremia is often met with is syphilis. From the recent investigations of Rosen and Krasnow,[1] who cited a considerable number of articles from the literature on determinations of cholesterol in syphilis, it is obvious that there is a marked tendency to hypocholesteremia in this disease. They obtained the lowest values in untreated patients with primary syphilis, somewhat higher ones in untreated patients with secondary syphilis and the highest, though still subnormal, values in patients with tertiary syphilis.

It seemed to us of importance, because of the close relationship existing between syphilis and frambesia, to determine the cholesterol content of the blood serum in persons suffering from the latter disease. *A priori,* one might expect results analogous to those obtained in syphilis.

Rosen and Krasnow used the modified method of Myers and Wardell for their determinations, whereas we used the method of Bloor. Only one of us made the determinations of cholesterol, so as to avoid misinterpretation in estimating the results.

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* Submitted for publication, Nov. 21, 1930.

* From the Military Hospital.

1. Rosen, I., and Krasnow, F.: Cholesterol Studies in Syphilis, Arch Dermat. & Syph. **20**:75 (July) 1929.

Bloor stated that in normal persons in North America the cholesterol content varied between 160 and 250 mg. per hundred cubic centimeters of blood serum.

Only a few cholesterol studies have been made on persons in the tropics. In the Dutch East Indies, Radsma,[2] working with the method of Bloor, reported an average cholesterol content of 207 mg. in fourteen students of the Stovia Medical School at Batavia and an average cholesterol content of 163 mg. per hundred cubic centimeters of serum in thirteen servants and coolies; he thus obtained higher values in the better classes, a fact which he tried to explain by the difference in the food used. Low values in apparently normal persons were also found by de Langen, but his material appeared to be composed of Javanese prisoners. He, too, considered the food to be the main cause of the low cholesterol content. By the same method an average of 175 mg. (from 132 to 216 mg.) per hundred cubic centimeters of blood was found by Lichtenstein in twenty Javanese soldiers.

In accordance with these rather low values in apparently normal persons in the tropics are the results of the studies of Mukharji in Bengalese coolies, while Montel and Peyrot gave the same for Anamese.

We did not have at our disposal data concerning the cholesterol content in healthy inhabitants of Dutch Guiana. We started to examine the blood serum of apparently healthy subjects, most of them children, at the same time making determinations of cholesterol for a number of unselected clinical patients suffering from various diseases. We then set out to determine the cholesterol content of the blood serum in patients with yaws, and finally studied the influence of specific treatment on the cholesterol content in the last-named group.

RESULTS

Results in Normal Subjects.—To obtain data concerning the cholesterol content of the blood serum in normal persons, we examined the blood of thirty-three apparently healthy children from a public school, with an average age of 13 years, among whom there were twelve girls and twenty-one boys; the group comprised seventeen creoles, fourteen Negroes and two British Indians.

As appeared from a preliminary investigation and later from the examination of the blood of patients with yaws, there was no distinct influence of age and race (except for the white race) on the cholesterol content of the blood, nor did sex prove to be an important factor, in contrast to the report of other investigators (Rosen and Krasnow, and others).

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2. Radsma, W.: Het Cholesterine gehalte van het Bloed bij de Bewoners der Tropen, Geneesk. tijdschr. v. Nederl. Indie **69**:793 (Aug. 1) 1929.

TABLE 1.—*Results Obtained in Normal Children*

Cholesterol, Mg. per 100 Cc. of Serum	Girls (12)		Boys (21)		Both Sexes (33)	
	No.	Per Cent	No.	Per Cent	No.	Per Cent
140-149	1	8.3	2	9.5	3	9.0
150-159	1	8.3	1	4.8	2	6.0
160-169	1	8.3	..	....	1	3.0
170-179	..	....	..	....	..	....
180-189	1	8.3	3	14.3	4	12.1
190-199	..	....	2	9.5	2	6.0
200-209	1	8.3	3	14.3	4	12.1
210-219	2	16.7	3	14.3	5	15.2
220-229	2	16.7	3	14.3	5	15.2
230-239	..	....	2	9.5	2	6.0
240-249	..	....	..	....	..	....
250-259	..	....	1	4.8	1	3.0
260-269	2	16.7	1	4.8	3	9.0
270-279	1	8.3	..	....	1	3.0

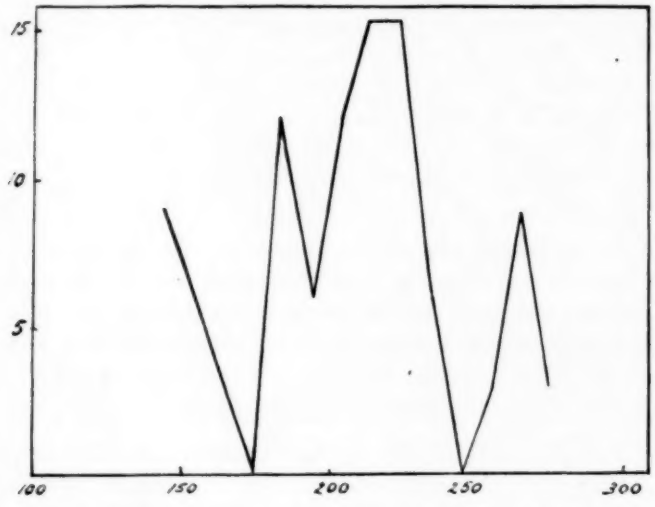

Chart 1.—Cholesterol content of the blood serum in thirty-three normal children. In this and the following charts the ordinate measures the percentage of children; the abscissa, the number of milligrams of cholesterol per hundred cubic centimeters of serum.

We preferred to conduct our investigations on children instead of adults, because most of the patients with yaws were children, and because in our opinion the results in children are more reliable, owing to the deplorable fact that in the tropics one cannot always trust a negative anamnesis in adults. Thus certain diseases, such as syphilis, frambesia and malaria, might have been present in adults and, unrecognized, would have made our studies more subject to error. The environmental conditions of the thirty-three children were identical with those of most of the patients with yaws.

TABLE 2.—*Results in Diseases Other Than Yaws*

Patient	Diagnosis	Age	Sex	Race	Wassermann Reaction	Cholesterol, Mg. per 100 Cc. of Serum	Comment
Mr. X	Syphilis II	29	M	European	4+	237	After 4.5 Gm. of neoarsphenamine and 30 cc. of bismuth oil
No. 303	Syphilis II	28	M	Negro	4+	122	Untreated mixed chancre
No. 252	Syphilis II	45	M	Negro	4+	185	After 3.75 Gm. of neoarsphenamine and 25 cc. of bismuth oil
No. 300014	Syphilis II	40	M	Javanese	4+	208	Complicated by ulcus molle phagedaenicum
No. 300005	Syphilis II	45	M	Negro	4+	191	Untreated
No. 300193	Syphilis II	20	M	Creole	4+	180	Untreated
A. K.	Syphilis II	25	M	Creole	4+	185	Previously treated
No. 247	Syphilis III	36	M	British Indian	4+	91	Ankylostomiasis; hemoglobin 12.5 Gm. (Sahli corrected)
No. 300047	Syphilis III	48	F	Javanese	+	120	Quartan malaria; gummatous ulcer
No. 300096	Syphilis III	38	M	Javanese	4+	156	
No. 300108	Syphilis III	40	M	Creole	4+	211	
No. 461	Tabes dorsalis	33	M	European	Neg.	268	After many courses of antisyphilitic treatment
No. 300069	Granuloma venereum	..	F	Creole	Neg.	200	
A. E.	Gonorrhea	9	M	Negro	Neg.	158	
M. 1500 A. F.	Gonorrhea	20	M	Javanese	Neg.	156	
No. 300053	Scrophuloderma	28	F	Negro	4+	156	In the presence of latent syphilis
P. 1083 T. T.	Tuberculosis of the lungs	38	M	Javanese	Neg.	84	The obduction showed extensive pulmonary phthisis
V. G.	Tuberculosis of the lungs	34	M	Creole	Neg.	165	Pulmonary phthisis
S.	Tuberculosis of the lungs	56	M	Creole	Neg.	262	Chronic proliferative condition
E.	Tuberculosis of the lungs	52	M	Creole	4+	103	
K.	Tuberculosis of the lungs	26	M	Javanese	+	185	
H.	Otitis media tuberculosa	9	M	British Indian	Neg.	98	
No. 300104	Lepra	5	F	Creole	Neg.	175	Lepra maculosa
No. 300090	Impetigo	23	M	Javanese	4+	194	In the presence of tertian malaria
No. 511	Impetigo	3	F	Javanese	4+	158	After bacillary dysentery
No. 512	Impetigo	2	F	Javanese	4+	248	After bacillary dysentery
No. 300049	Impetigo	3	F	Javanese	4+	245	
No. 300050	Impetigo	3	F	Javanese	+	250	Scabies and eczema impetiginosum
No. 300133	Impetigo	1½	M	Javanese	4+	178	Scabies and eczema impetiginosum
No. 300188	Scabies	4	M	Javanese	4+	285	General pyodermia
V.	Panaritium	28	M	Creole	Neg.	255	Pyodermia plantaris caused by Tunga penetrans
No. 300117	Pyodermia	30	M	Javanese	Neg.	165	General and obstinate streptococcicosis cutis
M.	Osteomyelitis	4	M	Creole	Neg.	358	Ankylostomiasis
L.	Thrombophlebitis	30	M	European	Neg.	298	Condition caused by filariasis
K.	Ulcus tropicum	43	M	Creole	4+	206	
d. J.	Ulcus tropicum	13	M	Creole	Neg.	266	Heavy degree of ankylostomiasis
N.	Ulcus pedis	54	M	Creole	+	149	Ulcus atonicum; dementia epileptica
M.	Ulcus cruris	50	M	Creole	Neg.	150	Filarial elephantiasis
No. 300088	Leishmaniosis cutis	40	M	Negro	Neg.	193	
No. 300012	Hypochondria	54	M	Negro	Neg.	210	
No. 431	Neurasthenia	27	M	British Indian	Neg.	200	
No. 284	Syphilophobia	24	M	Creole	Neg.	223	
K.	Enteralgia	8	M	Creole	3+	250	
B.	Rhinitis acuta	15	F	Negro	Neg.	150	
K.	Rhinitis	6	F	Creole	Neg.	220	
G.	Rhinitis	6	F	Creole	4+	168	No evidence of syphilis or frambesia
B. M.	?	26	F	Javanese	4+	212	No evidence of syphilis or frambesia
No. 300056	Pinta (?)	14	F	Negro	4+	141	No evidence of syphilis or frambesia
No. 300200	Lichen spinulosus	5	M	Javanese	Neg.	173	
B.	Bronchitis	36	M	Creole	Neg.	200	Chronic bronchitis; filariasis
H.	Bronchitis	37	M	Creole	Neg.	225	Chronic bronchitis
V.	Vitium cordis	19	M	Creole	4+	108	Tuberculosis incipiens (?); ankylostomiasis

TABLE 2.—*Results in Diseases Other Than Yaws—Continued*

Patient	Diagnosis	Age	Sex	Race	Wassermann Reaction	Cholesterol, Mg. per 100 Cc. of Serum	Comment
G.	Myodegeneratio cordis	66	M	Creole	Neg.	195	
T.	Vitium cordis	17	M	Javanese	Neg.	202	Mitral regurgitation
R.	Vitium cordis	60	M	Negro	Neg.	132	
D.	Ulcus duodeni	40	M	Creole	Neg.	143	
F.	Gastralgia	40	M	Creole	Neg.	200	Nervous indigestion
L.	Proctitis	30	M	Javanese	Neg.	193	Hemoglobin 35 Gm. (Sahli corrected); no intestinal parasites
J.	Bright's disease	50	M	British Indian	4+	113	
T.	Chorea minor	15	M	Creole	4+	124	General exhaustion
S.	Amentia	25	M	Javanese	Neg.	213	
R.	Cataract	62	M	Creole	Neg.	400	Arteriosclerosis
L.	Cataract	68	F	Creole	...	210	Incipient cataract
V.	Glaucoma	44	F	Creole	4+	234	Glaucoma absolutum; syphilis
B.	Bilharziosis	49	M	British Indian	3+	103	Cirrhosis hepatis bilharzica; ankylostomiasis; death 3 days later
S. K.	Ankylostomiasis	55	F	British Indian	Neg.	313	
R.	Malaria	25	M	Javanese	Neg.	199	Chronic estivo-autumnal and tertian malaria
P.	Malaria	12	F	Javanese	2+	183	Pernicious estivo-autumnal malaria
D.	Meningitis	40	M	Javanese	3+	210	Cerebrospinal meningitis
R.	Pyemia	30	M	Javanese	4+	91	Hemoglobin 55 Gm. (Sahli corrected)

Determinations of the cholesterol content of the blood serum in these children provided us with the following data:[3] The median was 212; the mean, 207; the standard deviation,[4] $\pm\sqrt{\frac{\Sigma(y-m)^2}{N}}$ or $\pm$ 35.5, and the average deviation, 27.8. In this instance the sex of the subject did not affect the cholesterol value.

Examination of the serum in a few normal adults gave values for cholesterol which agreed with those mentioned.

Results in Diseases Other Than Yaws.—The blood of seventy patients with various diseases was examined for the cholesterol content of the serum; the results are given in table 2.

A peculiar but not uncommon fact in the tropics is the frequency of a positive Wassermann reaction in patients in whom one would expect a negative reaction. We obtained this result although we handled the serum as carefully as possible, the reaction was controlled regularly and all patients were examined clinically for syphilis or yaws (table 2). We could explain this only by the possibility that many patients suffering from latent malaria or other diseases gave a positive serologic reaction. The antigen used in our Wassermann tests was an alcoholic extract of syphilitic liver.

Results in Yaws.—We examined four untreated patients with primary yaws, thirty untreated and twenty-three previously treated patients

3. These computations were made according to the method of C. R. Doering described in Rosenau, M. J.: Preventive Medicine and Hygiene, New York, D. Appleton & Company, p. 1177.

4. y equals the cholesterol content of the serum.

with secondary yaws and ten patients with tertiary yaws who, with one exception, had been treated before.

Because of the sometimes difficult differential diagnosis between primary and tertiary yaws, on the one hand, and ulcus tropicum, tertiary syphilis, etc., on the other, we chose for our investigations only typical

TABLE 3.—*Results in Primary Yaws*

Patient	Cholesterol, Mg. per 100 Cc. of Serum	Age	Sex	Race	Wassermann Reaction	Hemoglobin, Gm. (Sahli Corrected)	Weight, Kg.
O. 248	83	6	M	British Indian	4+	55	17.5
L. 255	93	8	F	British Indian	4+	80	18.4
v. H. 300221	104	11	M	Creole	4+	65	21.0
L. 300218	153	10	F	Creole	4+	65	20.0

TABLE 4.—*Results in Untreated Patients with Secondary Yaws*

Patient	Cholesterol, Mg. per 100 Cc. of Serum	Age	Sex	Race	Wassermann Reaction	Hemoglobin, Gm. (Sahli Corrected)	Weight, Kg.
W. 288	58	5	M	Javanese	4+	55	14.7
A. 250	65	4	M	Javanese	4+	60	13.0
L. 494	72	12	F	Javanese	4+	50	21.2
V. 265	80	2.5	M	Creole	4+	60	8.6
S. 287	81	11	M	British Indian	4+	75	29.2
S. 281	81	10	F	British Indian	4+	65	26.0
D. 272	91	6	F	British Indian	4+	60	19.7
A. 300142	98	20	M	Javanese	4+	62.5	45.0
W. 300159	103	6	M	Javanese	4+	59	17.5
V. 300060	103	29	F	Negro	4+	44	50.0
S. 510	104	13	M	Creole	4+	65	37.0
E. 304	110	7	F	Javanese	4+	69	24.5
E. 300013	119	8	M	Negro	4+	44	23.5
M. 300141	122	7	M	British Indian	4+	69	19.0
S. 268	128	8	M	British Indian	3+	75	20.0
V. 300050	129	9	F	Negro	4+	69	33.5
D. 300152	130	3	F	Javanese	4+	47.5	12.3
D. 300126	130	7	M	Creole	4+	69	17.0
W. 300144	135	7	F	Javanese	4+	75	19.1
A. 515	135	40	M	Javanese	4+	60	47.0
W. 300	138	16	M	Creole	4+	40	34.5
R. 300173	139	4	F	Negro	4+	62.5	13.7
K. 300189	142	1½	M	Javanese	4+	60	8.6
P. 300115	150	8	M	Negro	4+	52.5	21.0
U. 300137	150	15	M	Creole	4+	62.5	33.0
D. 300153	153	6	F	Javanese	4+	50	14.3
W. 300178	163	7	M	Negro	4+	62.5	21.0
C. 300225	190	14	M	Negro	4+	69	36.7
D. 300134	206	7	M	Javanese	4+	50	16.7
R. 300172	218	5	F	British Indian	4+	44	13.5

cases. The number of patients with primary and tertiary yaws therefore had to be smaller than that of patients with secondary yaws.

Besides the determinations of cholesterol, we recorded the hemoglobin content (Sahli corrected), the result of the Wassermann test and the weight of most of the patients.

Primary Yaws (Seropositive Stage): The four patients examined showed a typical primary lesion.

TABLE 5.—*Results in Patients with Secondary Yaws, Previously Treated*

Patient	Cholesterol, Mg. per 100 Cc. of Serum	Age	Sex	Race	Wassermann Reaction	Hemoglobin, Gm. (Sahli Corrected)	Weight, Kg.
S. 177	62.5	7	M	Creole	2+	45	25.0
R. 276	63	5	M	Javanese	4+	56	15.2
B. 242	84	11	M	British Indian	4+	65	26.0
J. 300097	110	13	M	British Indian	4+	50	33.4
S. 300235	125	10	M	Javanese	4+	..	....
N. 311	133	6	F	Creole	4+	50	18.5
R. 300175	134	9	M	British Indian	4+	66	21.0
S. 481	137	20	M	Javanese	3+	..	....
U. 334	140	9	M	Creole	2+	50	22.0
S. 222	142	42	M	Javanese	4+	40	53.7
U. 300136	145	13	F	Creole	4+	56	30.5
v. K. 300232	146	9	M	Creole	4+	52.5	29.4
R. 300099	150	3	M	British Indian	4+	62.5	14.2
W. 300224	156	12	M	Creole	4+	50	27.5
R. 300215	158	41	M	Javanese	4+	62.5	52.5
D. 300114	163	9	M	Negro	4+	47.5	21.8
R. 300098	165	8	M	British Indian	4+	37.5	21.0
P. 300185	171	35	M	Javanese	4+	77.5	55.0
B. 300079	175	10	M	Negro	4+	52.5	19.5
B. 305	175	8	M	Negro	4+	62.5	19.2
D. 300166	180	17	F	Javanese	4+	85	51.0
G. 339	198	15	F	Creole	2+	56	39.5
S. 300103	200	20	M	Javanese	4+	50	55.7

TABLE 6.—*Distribution of Values for Cholesterol Obtained in Nontreated and Treated Patients with Secondary Yaws*

Cholesterol, Mg. per 100 Cc. of Serum	Nontreated Patients (30)		Treated Patients (23)		Both Groups (53)	
	No.	Per Cent	No.	Per Cent	No.	Per Cent
50–59	1	3.3	..	....	1	1.9
60–69	1	3.3	2	8.7	3	5.6
70–79	1	3.3	..	....	1	1.9
80–89	3	10.0	1	4.3	4	7.5
90–99	2	6.6	..	....	2	3.8
100–109	3	10.0	..	....	3	5.6
110–119	2	6.6	1	4.3	3	5.6
120–129	3	10.0	1	4.3	4	7.5
130–139	6	20.0	3	13.0	9	16.9
140–149	1	3.3	4	17.4	5	9.4
150–159	3	10.0	3	13.0	6	11.3
160–169	1	3.3	2	8.7	3	5.6
170–179	..	....	3	13.0	3	5.6
180–189	..	....	1	4.3	1	1.9
190–199	1	3.3	1	4.3	2	3.8
200–209	1	3.3	1	4.3	2	3.8
210–219	1	3.3	..	....	1	1.9

TABLE 7.—*Results in Tertiary Yaws*

Patient	Cholesterol, Mg. per 100 Cc. of Serum	Age	Sex	Race	Wassermann Reaction	Hemoglobin, Gm. (Sahli Corrected)	Weight, Kg.
T. 300055	120	30	F	Javanese	4+	60	50.0
A. 300048	123	16	F	Javanese	4+	45	35.8
F. 300292	136	19	M	Negro	4+	..	....
T. 300002	144	30	M	Javanese	4+	75	50.5
S. 300094	175	13	M	British Indian	4+	62.5	27.5
D.	180	18	F	Javanese	4+	85	50.0
N. 300130	181	15	F	Creole	4+	62.5	35.5
O. 300222	200	10	F	Negro	4+	..	....
K. 514	200	36	M	Javanese	4+	60	54.7
B. 14	204	7	M	Creole	4+	62.5	22.8

Secondary Yaws: In table 4 the results of the examination of thirty untreated patients with frambesia are given; nineteen of the patients were females and eleven were males. From this table the following data for the cholesterol content of the serum were computed: median, 128.5; mean, 124.1; standard deviation, ± 38.3, and average deviation, 29.8.

In table 5 are shown the results of the examination of twenty-three previously treated patients with secondary frambesia, four of them females and nineteen males. The following data were obtained for this

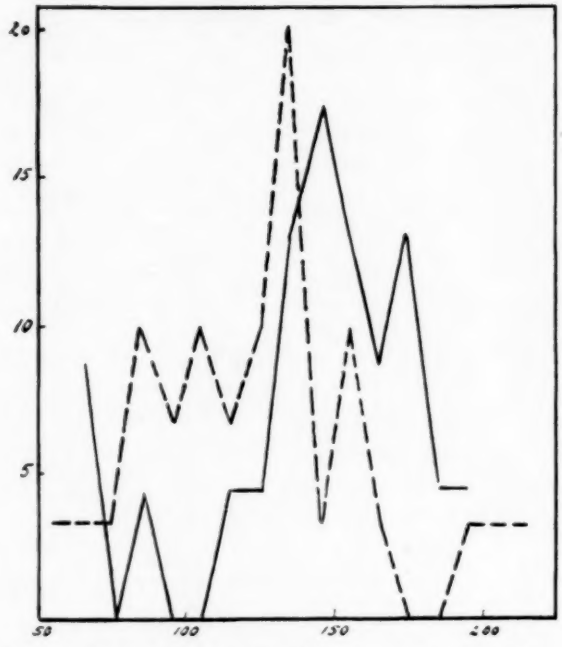

Chart 2.—Cholesterol content of the blood serum in fifty-three patients with secondary yaws. The solid line represents the patients previously treated; the broken line, untreated patients.

group: median, 146; mean, 143.8; standard deviation, ± 35.7, and average deviation, 26.5.

For all cases of secondary yaws we obtained the following values: median, 135; mean, 132.5; standard deviation, ± 38.5, and average deviation, 30.1.

Tertiary Yaws.—In table 7 are given the values for cholesterol in tertiary frambesia. We examined ten patients of whom five were females and five males. The following results were obtained: median, 177.5; mean, 166.3; standard deviation, ± 30.99, and average deviation, 26.7.

TABLE 8.—*Results of Specific Treatment in Frambesia*

Patient	Cholesterol, Mg. per 100 Cc. of Serum	Age	Wassermann Reaction	Date	Comment
L. 255	93	8	4+	11/ 7/30	Primary lesion
	91		4+	12/ 3/30	After 4 cc. of bismuth oil
S. 481	137	20	3+	10/31/29	Granulomas; frambesia papulosa miliaris (lichenoides)
	140		3+	12/ 7/29	After 24 cc. of bismuth oil
	93		Neg.	4/24/30	Recurrence
R. 276	63	5	4+	11/20/29	Granulomas; recurrence
	203		4+	1/ 9/30	After 6 cc. of bismuth oil
S. 287	81	11	4+	12/ 2/29	Granulomas; frambesia papulosa miliaris
	123		4+	1/ 2/30	After 5 cc. of bismuth oil
A. 515	135	40	4+	12/12/29	Granulomas
	139		4+	1/ 7/30	After 9 cc. of bismuth oil and 900 cc. of neoarsphenamine, papules disappeared
S. 222	142	42	4+	1/ 7/30	Granulomas
	183		4+	1/25/30	After 8 cc. of bismuth oil and 300 cc. of neoarsphenamine, papules nearly healed
	167		2+	2/17/30	After 17 cc. of bismuth oil and 2,700 mg. of neoarsphenamine
D. 242	84	11	4+	11/21/29	Granulomas after 10 cc. of bismuth oil
	155		2+	1/ 2/30	After 17.5 cc. of bismuth, papules healed
N. 311	133	6	4+	1/ 2/30	Granulomas after 300 mg. of neoarsphenamine
	135		4+	1/25/30	After 4 cc. of bismuth oil
S. 281	81	10	4+	11/30/29	Primary ulcer, frambesia papulosa miliaris
	148		1+	1/25/30	After 8 cc. of bismuth oil
	183		4+	8/ 7/30	Recurrence; papulocircinate lesion
L. 300024	225	8	4+	1/16/30	Granulomas; icterus catarrhalis
	239		4+	1/25/30	After 3 cc. of bismuth oil
	305		4+	2/28/30	After 8 cc. of bismuth oil and 700 cc of neoarsphenamine, icterus disappeared
A. 290	65	4	4+	12/ 5/29	General papular eruption
	140		3+	2/ 1/30	After 7.25 cc. of bismuth oil
	219		4+	2/27/30	After 11 cc. of bismuth oil
	167		4+	5/15/30	External symptoms absent
W. 300	138	16	4+	12/10/30	Granulomas; frambesia papulosa miliaris
	197		Neg.	1/30/30	After 12 cc. of bismuth oil and 900 cc. of neoarsphenamine
	165		Neg.	3/ 8/30	Eruption vanished
	175		4+	5/ 6/30	Frambesia papulosa plantae et palmae
L. 494	72	12	4+	11/20/29	Granulomas
	157		2+	1/10/30	After 4 cc. of bismuth oil and 1,275 mg. of neoarsphenamine, eruption vanished
S. 510	104	13	4+	12/14/29	Granulomas
	325		4+	1/ 7/30	After 14 cc. of bismuth oil, eruption vanished
E. 300013	119	8	4+	1/14/30	Primary ulcer and frambesia papulosa miliaris
	161		Neg.	2/28/30	After 4 cc. of bismuth oil and 1,050 mg. of neoarsphenamine, eruption vanished
	183		Neg.	3/25/30	After 5 cc. of bismuth oil and 1,050 mg. of neoarsphenamine
V. 300060	103	29	4+	2/ 8/30	Frambesia papulosa miliaris
	200		4+	3/ 8/30	After 14 cc. of bismuth oil, eruption vanished
	202		4+	3/25/30	After 18 cc. of bismuth oil
V. 300059	129	9	4+	2/ 8/30	Granulomas
	144		4+	3/22/30	After 10 cc. of bismuth oil, eruption vanished
	215		...	4/10/30	
S. 268	128	8	3+	11/18/29	General papular eruption
	204		4+	4/26/30	Recurrence after short period of treatment
W. 288	58	6	4+	12/ 5/29	Granulomas
	161		4+	4/22/29	After 2.5 cc. of bismuth oil
S. 177	62.5	7	2+	11/28/29	Recurrence in former primary lesion
	132		1+	4/10/30	Recurrence after 1.5 cc. of bismuth oil
J. 300097	110	13	4+	3/ 8/30	Granulomas
	175		4+	4/10/30	
	159		3+	4/28/30	
O. 300126	130	7	4+	3/20/30	Granulomas; frambesia papulosa miliaris

TABLE 8.—*Results in Specific Treatment in Frambesia—Continued*

Patient	Cholesterol, Mg. per 100 Cc. of Serum	Age	Wassermann Reaction	Date	Comment
D. 300114	163	9	4+	3/18/30	Frambesia papulosa plantae et palmae
	244		3+	4/10/30	After 1,050 mg. of neoarsphenamine
	200		4+	6/ 5/30	Recurrence: frambesia papulosa squamosa plantae et palmae
P. 300115	150	8	4+	3/18/30	Granulomas
	192		4+	4/ 9/30	After 600 mg. of neoarsphenamine
	175		...	6/ 6/30	
U. 300136	145	13	4+	3/27/30	General granulomatous eruption
	165		2+	5/ 1/30	After 1,800 mg. of neoarsphenamine
U. 300137	150	15		4/ 1/30	Primary ulcer; granulomas
	160			5/ 1/30	After 450 mg. of neoarsphenamine and 5 cc. of bismuth oil
D. 300152	130	3	4+	4/10/30	General papular eruption
	194		4+	5/10/30	After 375 mg. of neoarsphenamine
W. 300144	135	7	4+	4/ 5/30	Primary lesion; granulomas
	160		4+	4/22/30	After 150 mg. of neoarsphenamine
	222		4+	5/ 1/30	After 150 mg. of neoarsphenamine and 2 cc. of bismuth oil
D. 300166	180	17	4+	4/15/30	Frambesia paulosa squamosa plantaris
	175		4+	5/17/30	
R. 300175	134	9	4+	4/24/30	General granulomatous eruption
	117		...	6/ 5/30	
R. 300173	139	4	4+	4/24/30	Primary lesion; frambesia papulosa
	203		4+	5/22/30	miliaris
	152		...	6/13/30	
D. 300134	206	7	4+	3/29/30	General granulomatous eruption,
	147		4+	5/ 1/30	frambesia papulosa miliaris
A. 300048	123	16	4+	2/ 1/30	Gummatous ulcer
	163		4+	3/ 8/30	After 16 cc. of bismuth oil and 1,500 mg. of neoarsphenamine
T. 300002	144	30	4+	1/24/30	Gummatous ulcer
	120		4+	2/15/30	

The Result of Specific Treatment in Frambesia.—Several times, during specific treatment, we determined the cholesterol content of the blood serum. Among the patients examined, there were: one patient with primary yaws, thirty-one with secondary yaws and two with tertiary yaws. The specific treatment consisted of neoarsphenamine given intravenously, bismuth oil [5] given intramuscularly or these forms of treatment combined.

Table 8 shows that besides the marked rise in the cholesterol in most cases, there was also a rise in the rather low hemoglobin content that existed before treatment and in the weight during specific treatment, though there could not be said to be a definite relation between these two rises and the increase in the cholesterol. We were not able to find a difference in the response of the cholesterol content to treatment with neoarsphenamine or bismuth oil or with these drugs combined.

Excluding cases S.268, W.288 and S.177, because in these cases the second determination of cholesterol was made only from three to six months after the first one, it may be stated that in twenty of twenty-eight patients there was a distinct rise in cholesterol. Of the eight remaining cases, six showed unimportant change and two a distinct fall.

In table 9 further particulars are given.

5. Bismuth oil is a suspension of 75 mg. of bismuth hydroxide in 1 cc. of a 1 per cent solution of camphor in sesame oil.

The increase of cholesterol was usually between 0 and 100 mg. per hundred cubic centimeters of serum. A case of secondary yaws was observed, however, in which, because of the coexisting catarrhal jaundice, a relatively high cholesterol content (225 mg.) was present at the

TABLE 9.—*Changes of the Cholesterol Content in Secondary Yaws During Specific Treatment*

Difference Between 1st and 2nd Determination of Cholesterol, Mg. per 100 Cc. of Serum	No. Patients Showing a Rise of Cholesterol Content	Per Cent	No. Patients Showing a Fall of Cholesterol Content	Per Cent
	+		−	
0–49	12	42.9	3	10.7
50–99	10	35.7	1	3.6
100–149	1	3.6	..	....
150–199	..	....	..	....
200–249	1	3.6	..	....
	24	85.8	4	14.3

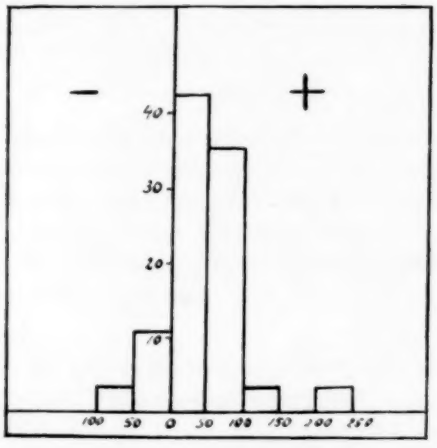

Chart 3.—Changes of the cholesterol content in secondary yaws during specific treatment.

first determination. During specific treatment the cholesterol rose to 239 mg. in nine days and to 305 mg. after six weeks, at which time the jaundice had totally disappeared.

SUMMARY

We have recorded the results of cholesterol determinations on the blood serum in 170 subjects, of whom 33 were apparently healthy children, 70 were patients suffering from diseases other than yaws, and 67 were patients with yaws. The latter group was composed of 4 patients with primary yaws, 53 with secondary yaws and 10 with tertiary

yaws. With the exception of 3 Europeans, belonging to the second group, we dealt with Javanese, British Indians, Negroes and creoles.

We obtained an average value of 207 ± 35.5 in normal children. The seventy patients suffering from other diseases than yaws showed values fluctuating around this average; only in certain conditions which involved the whole organism, such as active syphilis, tuberculosis, etc., were smaller amounts of cholesterol observed.

The values found in impetigo were strikingly high as compared with those noted in cases of frambesia, in which the eruption was of an impetigo-like character.

We observed a distinctly low cholesterol content in the blood serum in yaws. The number of patients with primary yaws was too small to allow us to draw any conclusions. They showed, however, very low amounts of cholesterol in the serum.

Higher values were observed in untreated patients with secondary yaws, for whom the average of 124.1 ± 38.3 was computed, whereas still higher amounts were found in patients with secondary yaws who had previously received treatment—143.8 ± 35.7. For all cases of secondary yaws an average of 132.5 ± 38.5 was found.

The highest amounts seemed to be present in tertiary frambesia, in which an average of 166.3 ± 30.9 was observed. Corresponding results were obtained by Rosen and Krasnow in cases of syphilis. During specific treatment the amount of cholesterol in the serum showed a marked increase in most of the patients. Sometimes a rapid rise resulted; in only a few cases was there a tendency of the cholesterol to fall to subnormal values.

CONCLUSIONS

1. The cholesterol content of the blood serum is low in patients suffering from yaws.

2. This hypocholesteremia may be of importance in the sometimes difficult differential diagnosis of yaws and ulcus tropicum, ulcus simplex, tropical impetigo, etc.

3. During specific treatment with arsenical as well as with bismuth compounds we noted a general improvement, which expressed itself in the disappearance of the cutaneous manifestations, an increase in the amount of hemoglobin and in the weight and, finally, an increase in the cholesterol in the blood serum.

SYMPTOMATIC AND ASYMPTOMATIC RINGWORM OF THE FEET

A REPORT BASED ON A STUDY OF ONE THOUSAND SEVENTY-THREE CONSECUTIVE CASES IN THE DISPENSARY, COVERING A PERIOD OF ONE YEAR *

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That ringworm of the feet is widespread throughout the nation is recognized. How widely distributed it is and how it spreads are matters both of importance and dispute, even if they are not as vital as the questions of prophylaxis and treatment. It is our purpose in this paper to discuss some phases of the prevalence of the condition, and perhaps to shed some new light thereon. The treatment, concerning which special studies are being conducted, will be discussed in a subsequent paper.

Epidermophytosis of the feet (synonyms: epidermomycosis, dermatophytosis, dermatomycosis and eczematoid ringworm of the feet) was given scant consideration and occupied a position of little importance in dermatology before the World War. This was probably due not so much to the fact that it was not then prevalent as to the fact that the true nature of this disease was not generally recognized. The importance now attached to the condition, is therefore, relatively new, although, as Weidman has remarked, dermatophytosis is not a new disease. "Like appendicitis, it has been with us long since. The 'new' phase of it was born in ourselves coincident with the realization that many resistant scaly 'eczemas' and obstinate intertrigos were caused by fungus infection, and, therefore, constituted expressions of dermatophytosis."

As eminent a dermatologist as William T. Corlett [1] frankly admitted, in 1921, that ever since he had begun a routine searching for ringworm fungus, 90 per cent of the conditions that he previously had termed eczema of the feet had turned out to be ringworm (especially those occurring during the months of March, April and May; the percentage

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1. Corlett, William T., in discussion of Mitchell, J. H.: Further Studies on Ringworm of the Hands and Feet, Arch. Dermat. & Syph. **5**:174 (Feb.) 1922.

was lower in other months). Corlett's experience has been that of every physician who has microscopically examined scrapings taken from these lesions and treated them with from 10 to 30 per cent sodium hydroxide solution.

After many years the real significance of epidermophytosis of the feet has ultimately been recognized and appreciated by physicians.

The time from Balsamo and Bassi (1835) to Schoenlein (1839), from Schoenlein to Tilbury Fox (1870), from Fox to Moukhtar (1892), from Moukhtar to Whitfield, Sabouraud and Castellani (1910) and from the period of the latter investigators to the present day, may be said to approximate roughly the periods of evolution in the history of epidermophytosis.

Most of the knowledge and the interest in this disease shown by the medical profession today—an interest that has been manifested mainly by dermatologists—dates, however, from about 1910. It is only within about the last five years that the medical profession in general has become aware that the vast majority of the so-called "eczemas" and interdigital intertrigos of the hands and feet are really fungus infections.

In this country, the public, too, has relatively recently become aware of tineal infection of the hands and, especially, of the feet. This public consciousness of ringworm may be attributed to three factors: (1) the increase, both apparent and real, in the prevalence of the disease; (2) the dissemination of information on it by physicians, newspapers, state, county and local public health departments, the United States Public Health Service, etc., and (3) the advertising propaganda of commercial houses intent on selling purported cures for the disease—terming the latter athlete's foot, golfer's itch, gym itch, foot tetter, and other conditions, and informing the public that these conditions are due to ringworm.

EPIDEMIOLOGIC VARIETIES

The universality of ringworm of the feet is undisputed. Nevertheless, we believe that the question of its epidemiology is one that cannot always be answered easily and simply. This difficulty is not due to the fact that the clinical manifestations of ringworm of the feet, like those of eczema, happen to be protean (White [2] listed eleven different clinical varieties, exclusive of ringworm of the nails, which may exist singly or in various combinations); it is rather due to the fact that there are several epidemiologic varieties of the disease.

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2. White, C. J.: Fungus Diseases of the Skin: Clinical Aspects and Treatment, Arch. Dermat. & Syph. **15**:387 (April) 1927.

Since not every morphologic type gives rise to symptoms severe enough to cause the patient to go to his physician for relief, ringworm of the feet may be divided into two, perhaps three, epidemiologic varieties:

1. Symptomatic ringworm of the feet, i. e., cases in which the patients are acutely aware of the presence of lesions and go to the physician primarily for relief.

2. Asymptomatic ringworm of the feet, i. e., cases in which lesions are present but which give rise to such mild symptoms, if any, that the patients are unmindful of them and do not bother to see their physicians about them. Frequently, as has been shown by various investigators and as we have found in the dispensary, these patients are unaware of the presence of lesions, the latter being discovered only when especially looked for by the physician. These asymptomatic infections, therefore, either are self-treated with home remedies or, as is most often the case, are ignored by, or unknown to, the patient. These asymptomatic cases are of epidemiologic importance for the patients are potential and actual carriers of ringworm, analogous, for example, to carriers of diphtheria or typhoid fever. Furthermore, asymptomatic cases may, sooner or later, become symptomatic.

To these classifications may be added a third, or the clinically negative group (really a subdivision of the asymptomatic group). This group consists of patients whose feet show no apparent lesions, yet scrapings obtained from their toes, interdigital spaces [3] and nails [4] yield positive evidence of fungus, with all the cultural characteristics of the true pathogens.

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3. Cornbleet, T.: Cultures from the Skin of Apparently Normal Feet, Arch. Dermat. & Syph. **13**:670 (May) 1926. "Three out of 100 cultures from the fourth interdigital space of apparently normal feet yielded cultures of pathogenic fungi."

4. William, C. M.: Tinea of the Nails as a Source of Reinfection in Tinea of the Feet, Arch. Dermat. & Syph. **18**:730 (Nov.) 1928. Williams, C. M., and Barthel, Elsie A.: Tinea of the Toe Nails as a Source of Reinfection in Tinea of the feet, J. A. M. A. **93**:907 (Sept. 21) 1929. Augustus Ravogli, in discussion of Mitchell (footnote 1), called attention "to the connection which exists between the trichophytosis of the hands and feet and the condition of the nails." Hodges, R. S.: Ringworm of the Nails, Arch. Dermat. & Syph. **4**:1 (July) 1921. Of sixteen cases of onychomycosis, eleven had associated involvement of the lanugo hairs by the same variety of fungus as that found in the nails. Tinea cruris was found frequently in coexistence with onychomycosis. Rockwood, E. M.: A Study of Fungus-Infected Nails, Arch. Dermat. & Syph. **22**:395 (Sept.) 1930. "In nineteen patients who were examined for interdigital scaling and abnormal nails, eight showed no scaling although the nails were microscopically positive; i. e., 42 per cent of those showing nothing between the toes had definite fungus nails.

In view of these epidemiologic varieties, it is therefore not a little confusing to know just what is meant when the question of prevalence is brought up. We believe that the meaning of the term epidemiology of epidermophytosis of the feet would be simplified if a distinction between its symptomatic and asymptomatic varieties were always drawn. When the question of its prevalence is discussed, this desirable common understanding would be furthered were it generally understood that the symptomatic variety only was meant, unless otherwise specified.

CHARACTERISTICS OF THE INFECTION

Prevalence.—Surgeon General Cumming [5] stated, "The disease is remarkably frequent, and it is probable that at least one-half of all adults suffer from it at some time . . . . It is met with in every part of the country and is more frequent in the South than in the drier and colder climates."

Goodman [6] stated, "The disease is to be found wherever people have the habit of walking barefooted on moist surfaces. Thus, the South shows the disease more than the North."

Castellani [7] noted the extreme frequency of mycotic infection of the hands and feet "in the tropics and in general in all countries with a warm, moist climate, such as Louisiana and Mississippi in the United States, and certain parts of Southern Italy, Spain and the Balkans." In New Orleans, he stated, more than 30 per cent of the medical students suffer from epidermophytosis of the toes in the late spring and summer.

McCarthy [8] stated, "Where large numbers of men and women are grouped together, as in armies, colleges, schools, etc., clinically one-third of them show ringworm infection involving the hands and feet."

In 1921, White [9] stated, "This disorder stands fourth in my private practice, and I imagine the same holds true all over the country."

More recently, Stevenson,[10] reiterating a view entertained by many authorities, stated that the condition is distinctly seasonal, occurring especially in persons who perspire freely. He found it present in 50 per cent of his patients between May and October.

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5. Cumming, H. S.: United States Public Health Service, Health News Bull. E28, September, 1928.

6. Goodman, Herman: Ringworm of the Toes, M. Rev. of Rev. **35**:3 (Jan.) 1929.

7. Castellani, Aldo: Mycosis, Brit. M. J. **1**:958 (June 2) 1928.

8. McCarthy, Lee: Ringworm Infection of the Glabrous Skin, Virginia M. Monthly **54**:706 (Feb.) 1928.

9. White, C. J., in discussion of Mitchell (footnote 1).

10. Stevenson, James: Ringworm of the Hands and Feet, J. Oklahoma M. A. **22**:113 (Feb.) 1929.

Origin.—Mitchell,[11] Goodman[6] and Butler and his associates[12] expressed the belief that the widespread degree of its prevalence today is a post-war effect, following the demobilization of our soldiers.

Legge, Bonar and Templeton[13] suggested that the nation-wide distribution of ringworm infection may, in part, be due to importation into this country through the medium of students from India, China and Japan attending our institutions of learning. The so-called "Hong Kong foot," "Shanghai foot," "mango toe" of Ceylon, and many other conditions of the feet common to tropical and semitropical countries are really ringworm infections.

Dissemination.—Although there may be differences of opinion as to how the infection was brought here and just what proportion of the population is already infected, all authors apparently agree that ringworm of the feet is largely transmitted through the medium of gymnasium, locker, shower and bathroom floors, swimming pools, Russian and Turkish baths, etc., plus the exercise of a more or less careless personal hygiene in the use of towels, slippers, socks, stockings, etc. The investigations of Hulsey and Jordan,[14] Sharp and Taylor,[15] and particularly the more recent works of Legge, Bonar and Templeton[16]

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11. Mitchell, J. H.: Further Studies on Ringworm of the Hands and Feet, Arch. Dermat. & Syph. **5**:174 (Feb.) 1922.

12. Butler, C. S.; Houghton, J. E., and Cooper, G. F.: Mycosis of the Hands and Feet, U. S. Nav. M. Bull. **21**:615 (Nov.) 1924. "The geographical distribution of eczematoid dermatitis (due to Ringworm) of the hands and feet may be said to be world wide. It is possible that the World War served to supply to every nation participating such mycotic strains as they may not have formerly possessed."

13. Legge, R. T.; Bonar, Lee; and Templeton, H. J.: Ringworm of the Feet, J. A. M. A. **92**:1507 (May 4) 1929; Incidence of Foot Ringworm Among College Students, ibid. **93**:170 (July 20) 1929.

14. Hulsey, S. H., and Jordan, F. M.: Ringworm of the Toes as Found in University Students, Am. J. M. Sc. **169**:267 (Feb.) 1925. "On the clinical basis, that is, from objective symptoms alone, 67 per cent of our student body (University of Pennsylvania) have ringworm of the toes. On the evidence of the microscope, that is, the discovery of mycelia, 47 per cent were affected. Culturally proven cases number 5 per cent. This disease is by no means one affecting particularly the dispensary class of patients."

15. Sharp, W. B., and Taylor, E. K.: Interdigital Ringworm Control Among Students, J. Prev. Med. **2**:485 (Nov.) 1928. Of 679 students (478 men and 101 women) studied at the University of Chicago in 1925 and 1926, 205 (42.9 per cent) of the men and 59 (32.6 per cent) of the women gave clinical evidence of ringworm of the feet.

16. Legge, Bonar and Templeton, (footnote 13). Of 3,105 freshmen at the University of California in the fall of 1928, 53.3 per cent of the men and 15.3 per cent of the women presented clinical evidence of ringworm of the feet. At the

at the University of California on the incidence of ringworm of the feet among college students and its relation to hygiene in the gymnasium indicate the enormous degree of prevalence and the potent manner of dissemination and spread of this affliction. Apparently this is also true of high school pupils. Gould,[16a] examining the pupils at the Albany Junior High School in the fall of 1929, found that about 50 per cent of them temporarily had to be excluded from physical training classes because of this condition.

SCOPE OF THIS PAPER

An eminent authority has observed that "the disease (i. e., dermatophytosis) is preeminently one of private practice." Hulsey and Jordan [14] have stated that, "This disease is by no means one affecting particularly the dispensary class of patients."

Assuming that the high schools and colleges and the social customs of the middle and upper classes of society are responsible for a large measure of the prevalence and spread of the entity known as ringworm of the feet, the following pertinent questions arise:

1. How many persons in the lower economic strata of society (the class that frequents dispensaries, for example), as yet strangers to such luxuries as gymnasiums, country clubs, golf clubs, etc., have this disease?

2. Of the number of these persons suffering from the disease, how many are unaware of or indifferent to it?

In this paper we shall limit ourselves to the presentation and analysis of data gathered in answer to these two questions. These data were gathered especially from the point of view of the prevalence of the two epidemiologic varieties of ringworm of the feet, i. e., the symptomatic and asymptomatic (including clinically negative cases), and were derived from the study of a series of 1,073 patients over 2½ years of age examined consecutively in the dispensary of The Skin and

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end of the spring semester, a survey was made of 1,000 men and 997 women who had been engaged for two semesters in physical education and who had entrée to the showers, swimming pools and apparatus. It was found that 78.6 per cent of the men (an increase of 25.3 per cent) and 17.3 per cent of the women (an increase of 2 per cent) gave clinical manifestations of ringworm of the feet. The authors stated the belief that inferior sanitary facilities and an inferior type of personal hygiene among the men contributed to the marked increase in prevalence among them.

16a. Gould, W. L.: Ringworm of the Feet, J. A. M. A. **96**:1300 (April 18) 1931.

TABLE 1.—*Symptomatic Ringworm of the Feet*

		Total Number	Per Cent
1. Consecutive cases studied in the dispensary		1,073	100.0
2. Cases of clinically primary symptomatic ringworm of the feet		50	4.7
3. Microscopic observations for fungus in these 50 cases:			
Positive		46	92.0
Negative		4	8.0
4. Examination of cultures (cultures not taken systematically)			
5. Clinical varieties (classified according to predominating type):			
(A) Intertriginous (scaly and macerative)		25	50.0
(1) Involving the fourth interspace only	2		
(2) Involving the fourth interspace plus other interspaces	23		
(3) Involving other interspaces but omitting the fourth	0		
(B) Vesiculopustular		18	36.0
(C) Dry, scaly, hyperkeratotic		7	14.0
		50	100.0
6. Sex incidence*:			
Males		32	64.0
Females		18	36.0
7. Age incidence†:			
First decade	1		
Second decade	4		
Third decade	11		
Fourth decade	13		
Fifth decade	11		
Sixth decade	6		
Seventh decade	4		
Eighth decade	0		
Total	50		
8. Seasonal incidence‡:			
January	2		
February	3		
March	5		
April	3		
May	11		
June	7		
July	8		
August	4		
September	1		
October	2		
November	1		
December	3		
Total	50		
9. Occupational incidence:			
Housewife	11		
Unemployed or occupation not stated	27		
Student	7		
Salesman	1		
Small storekeeper	1		
Cab driver	1		
Jewelry worker	1		
Huckster	1		
Total	50		

* Males predominated almost 2:1.

† Seventy per cent of the cases occurred in the third, fourth and fifth decades, and 78 per cent occurred in the second, third, fourth and fifth decades.

‡ One third of the cases (32 per cent) occurred in the fall and winter months; two thirds (68 per cent) in the spring and summer months, and three fifths (60 per cent) in the months of May, June, July and August.

Cancer Hospital of Philadelphia over a period of exactly one year, from Aug. 16, 1929, to Aug. 15, 1930, inclusive.

Scrapings were obtained from the feet and especially from between the toes of each of the patients, regardless of whether clinical lesions of the toes were present or not. Scrapings were not made from the nails. All scrapings were treated with 10 per cent sodium hydroxide solution, examined microscopically within six hours, and recorded as either positive or negative for fungus. Doubtful cases were recorded as negative. Evidence positive for fungus was noted on subsequent rescraping and reexamination in a number of cases that were negative on first examination. These secondary observations, however, have not been included or reckoned with in this report.

A clinical description of the toes was entered on the charts of 75 per cent of the patients. For various reasons, the toes of the other 25 per cent of our cases were not described. These undescribed cases are listed as "unrecorded."

In a number of the cases in this series scrapings were planted and growths repeatedly replanted on tubes of Pennsylvania medium (i. e., Weidman's modification of Sabouraud's medium), but since no systematic records of these were kept, they are not included in this report.

The detailed results of our investigations are summarized in the tables.

COMMENT ON INCIDENCE OF SYMPTOMATIC RINGWORM

Primary symptomatic ringworm (epidermophytosis) of the feet occurred in 4.7 per cent of our clinical cases over a period of one year. For diseases of the skin, this is a substantial figure. A brief study of the relative incidence of the various diseases of the skin and, particularly, the position that epidermophytosis of the feet occupies among them is, therefore, of pertinent interest.

The most recent compilation on the subject is that of Goodman.[17] In analyzing the records of the New York Skin and Cancer Hospital over a period of five years (from 1923 to 1927, inclusive, and covering 108,283 cases), he found that eczema ranks first among the most common diseases of the skin (constituting 21 per cent of all cases); acne, second (10 per cent); scabies, seborrhea, urticaria and dermatitis venenata rank third, fourth fifth and sixth, respectively (each 5 per cent); psoriasis, seventh (4 per cent); impetigo, eighth (3 per cent); tinea, ninth (2 per cent), and verruca, tenth (1 per cent).

17. Goodman, Herman: Statistics of the Ten Most Common Skin Diseases, Arch. Dermat. & Syph. **20**:186 (Aug.) 1929; Tinea, the Second Most Prevalent Disease of the Skin, ibid. **23**:872 (May) 1931. In the latter paper, Goodman stated that in 1928 and 1929 the number of cases of "epidermophytosis, ringworm of the feet and hands, was almost exactly equivalent to the number of cases of acne for 1928 and 1929." He also observed that, "It will not be so long before ringworm will lead the list of common diseases of the skin, particularly as cases of clinical eczema are studied on the basis of fungi as etiologic factors."

In this compilation, however, "in order to avoid certain irregularities which would otherwise have crept into the tables (the term) tinea includes circinata, cruris, versicolor, dyshidrosis and pomphyolyx." Were the first three of the last named conditions omitted from the calculations, since only the last two, dyshidrosis and pompholyx, could apply to the feet, it is obvious that tinea of the feet would rank much lower than ninth in the list.

However, in view of the virtually universal prevalence in this country of ringworm infection of the feet (in both the symptomatic and asymptomatic forms), and the greater frequency with which this entity is now being recognized and diagnosed, we believe that the position of the primary or symptomatic form of this disease should be high up in the scale of relative frequency of cutaneous disorders.

In 1924, Hazen,[18] in virtual agreement with White,[9] stated that from 9 to 10 per cent of all his new patients presented cases of symptomatic epidermophytosis (this did not cover the total percentage of those affected asymptomatically). If the asymptomatic variety were included in statistical considerations, ringworm infection of the feet would displace eczema as the most common disease of the skin.

Weidman [19] observed that "the higher social strata are affected much more frequently than the dispensary classes." Our figure of 4.7 per cent for symptomatic ringworm of the feet in patients frequenting our dispensary is in keeping with the figures of White and of Hazen for the incidence among private patients. It is not, however, in accord with the conclusion of Hulsey and Jordan [14] that "This disease is by no means one affecting particularly the dispensary class of patients." On the contrary, our experience shows that the incidence of primary symptomatic ringworm of the feet constitutes a substantial percentage of dermatoses found in patients who must visit dispensaries.

It may be contended, perhaps, that the social level of our patients (table 1, section 9, occupational incidence) may be somewhat higher than that of patients at other clinics (less than 2 per cent of our patients were colored and few were laborers). In this connection, however, we may cite the experience of Smith and Crutchfield. At the El Paso City-County Clinic, Smith [20] made an effort to find apparently

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18. Hazen, H. H.: Eczematoid Ringworm, J. A. M. A. **83**:1123 (Oct. 11) 1924.

19. Weidman, F. D.: Dermatophytosis, Pennsylvania M. J. **32**:489 (April) 1929.

20. Smith, L. M.: Ringworm Infection of the Hands and Feet: A Consideration of Its Recurrences, Southwestern Med. **14**:102 (March) 1930.

TABLE 2.—*Asymptomatic Ringworm of the Feet*

		Total Number	Per Cent
1. Consecutive cases studied in the dispensary		1,073	
2. Cases of symptomatic ringworm		50	
3. Cases studied clinically and microscopically (per scrapings) for presence of asymptomatic ringworm of the feet		1,023	
(a) With clinical descriptions of the feet recorded	755		
(b) With clinical descriptions of the feet unrecorded	268		
(c) With microscopic observations recorded	1,023		
4. Microscopic evidence of fungus in 1,023 patients:			
Positive		529	51.7
Negative		494	48.3

5. Examination of cultures (cultures not taken systematically)

6. Clinical observations:

Type	Positive for Fungus		Negative for Fungus		Total Number	Per Cent*
(A) Intertriginous	263		205		468	62.0
(1)	79		49			
(2)	172		145			
(3)	12		11			
(B) Vesiculopustular	...		...		.....	.....
(C) Dry, scaly, hyperkeratotic	76		54		130	17.2
(D) Unrecorded	126		142		268	.....
(E) Clinically negative	64		93		157	20.8†
Total	529		494		1,023	100.0

7. Sex incidence‡:

	Positive for Fungus		Negative for Fungus		Total Number	Per Cent
	Number	Per Cent	Number	Per Cent		
Males	239	23.4	221	21.6	460	45.0
Females	290	28.3	273	26.7	563	55.0
	529		494		1,023	100.0

8. Age incidence‖:

	Positive for Fungus		Negative for Fungus		Total Number	Per Cent
	Number	Per Cent	Number	Per Cent		
First decade	13	17.6	61	82.4	74	
Second decade	116	50.9	112	49.1	228	
Third decade	144	50.5	141	49.5	285	
Fourth decade	110	60.8	71	39.2	181	
Fifth decade	60	51.3	57	48.7	117	
Sixth decade	55	64.7	30	35.3	85	
Seventh decade	27	58.7	19	41.3	46	
Eighth decade	4	57.1	3	42.9	7	
Total	529		494		1,023	100.0

TABLE 2.—*Asymptomatic Ringworm of the Feet—Continued*

	Total Number	Per Cent
9. Division of the 1,023 asymptomatic cases according to		
(a) First decade (from 2½ to 10 years, inclusive	74	7.2
(b) All other decades combined	949	92.8

10. Analysis of the clinical and microscopic observations in the 74 cases (in the first decade):‡

Clinical Lesions			Microscopic Observations for Fungus			
			Positive		Negative	
Present	Absent (Clinically Negative)	Unrecorded				
13	47	14	13	17.6%	61	82.4%

11. Analysis of the clinical and miscroscopic observation in 949 cases (in the other, combined decades):

Clinical Lesions			Microscopic Observations for Fungus			
			Positive		Negative	
Present	Absent (Clinically Negative)	Unrecorded				
585	110	254	516	54.4%	433	45.6%

12. Seasonal incidence:¶

	Positive for Fungus		Negative for Fungus		Total	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
January	47	41.1	65	48.9	112	
February	41	43.2	54	56.8	95	
March	55	51.4	52	48.6	107	
April	37	50.7	36	49.3	73	
May	54	58.1	39	41.9	93	
June	74	74.0	26	36.0	100	
July	48	46.2	56	53.8	104	
August	35	42.7	47	57.3	82	
September	39	52.0	36	48.0	75	
October	38	62.3	23	37.7	61	
November	36	56.3	28	43.7	64	
December	25	43.9	32	56.1	57	
Total	529		494		1,023	100.0

* The percentage of the various clinical types in this group is figured on a basis of 755 cases, the unrecorded cases not being included in the calculation.

† This includes children from 2½ to 10 years of age, inclusive.

‡ Males and females were about equally affected.

‖ Sixty per cent of the cases occurred in the third, fourth and fifth decades; 64.5 per cent occurred in the second, third and fourth decades, and 70 per cent occurred in the second, third, fourth and fifth decades.

See table 4, p. 442.

¶ Forty-nine and one-half per cent of the cases occurred in the fall and winter, 51.5 per cent in the spring and fall, and 37 per cent in May, June, July and August.

normal toes on his patients. "Such were difficult to find," he stated, "because the personal hygiene of the Mexican laborer and their families is very low and active ringworm is almost the rule." Crutchfield, as a member of a commission to study state prisons in Texas, found that over 80 per cent of the prisoners had fungus infections of the feet.

COMMENT ON INCIDENCE OF ASYMPTOMATIC RINGWORM

Clinical lesions suggestive of the presence of ringworm of the feet were found in 4 out of every 5 patients (79.2 per cent) with a complaint of cutaneous disorders other than the symptomatic variety of epidermophytosis of the feet. If patients under 10 years of age are excluded from our calculations, the ratio becomes greater, increasing to approximately 6 out of every 7 patients (84.2 per cent).

Ringworm fungi were found microscopically in a little more than one half (51.7 per cent) of the 1,023 patients examined.

TABLE 3.—*Clinically Negative Cases*

	Total Number	Per Cent
1. Consecutive cases studied in the dispensary	1,073	
2. Cases of symptomatic ringworm (table 1)	50	
3. Cases studied for asymptomatic ringworm (table 2)	1,023	
4. Clinical observations:		
(A) Asymptomatic cases with unrecorded clinical observations	268	
(B) Asymptomatic cases with recorded clinical observations	755	
(1) Patients with clinical lesions suggestive of ringworm infection of the feet	598	79.2
(2) Patients without apparent lesions of the feet (i. e., clinically negative)	157	20.8
(a) Incidence in the first decade of life	47	6.2
(b) Incidence in all other decades combined	110	14.6
5. Microscopic observations for fungus		
(a) In the 157 patients without clinical lesions		
Positive	64	40.8
Negative	93	59.2
(b) In the remaining 866 patients		
Positive	465	53.8
Negative	401	46.2
Total	1,023	

INCIDENCE OF CLINICALLY NEGATIVE CASES

Approximately 1 of every 5 (20.8 per cent) of the 755 recorded asymptomatic cases showed no clinical lesions of the feet, i. e., they were clinically negative. Sixty patients were children from 2½ to 10 years of age. Approximately 4 of 5 of the children (47 of 60, or 78.3 per cent) and 1 in 6 of the remaining patients (110 of 695, or 15.8 per cent) gave clinically negative results. Microscopic examination for fungus was positive in 2 of every 5 patients classified as clinically negative.

TABLE 4.—*Composite Table of Recorded Patients in the First Decade of Life (from 2½ to 10 Years of Age) in the Asymptomatic Group, Showing Those with and Those without Clinical Lesions (Clinically Negative), and Those in Whom Examination for Fungus Gave Positive or Negative Results*

Case	Sex	Age	Clinical Lesions*			Microscopic Observations for Fungus	
			Present	Absent	Unrecorded	Positive	Negative
1	M	9	.....	E	..	..	—
2	M	4	.....	E	..	..	—
3	M	2½	A (2)	..	..	..	—
4	F	6½	.....	..	D	..	—
5	F	7	A (3)	..	..	+	..
6	M	10	.....	E	..	..	—
7	F	9	.....	..	D	..	—
8	F	5	.....	E	..	..	—
9	M	9	.....	E	..	..	—
10	M	2½	.....	..	D	+	..
11	F	10	.....	E	..	+	..
12	M	10	A (2)	..	..	+	..
13	F	10	.....	E	..	..	—
14	M	6	A (2)	..	..	..	—
15	F	4	.....	E	..	..	—
16	M	3	.....	E	..	..	—
17	F	?	.....	..	D	..	—
18	F	8	A (2)	..	..	+	..
19	M	2½	.....	..	D	..	—
20	F	9	.....	E	..	+	..
21	M	3	.....	E	..	..	—
22	F	9	A (1)	..	..	+	..
23	M	3½	.....	E	..	..	—
24	F	2½	.....	E	..	..	—
25	F	10	.....	..	D	+	..
26	F	10	.....	..	D	..	—
27	M	5½	A (1)	..	..	..	—
28	F	8	.....	E	..	+	..
29	M	5	.....	E	..	..	—
30	M	2½	.....	E	..	..	—
31	M	2½	.....	E	..	..	—
32	F	10	.....	E	..	..	—
33	F	2	.....	E	..	..	—
34	M	3½	.....	E	..	..	—
35	F	2½	.....	E	..	..	—
36	F	8	.....	E	..	..	—
37	F	10	.....	E	..	+	..
38	F	10	.....	E	..	..	—
39	M	10	.....	E	..	..	—
40	M	5½	A (2)	..	..	..	—
41	M	2½	A (1)	..	..	..	—
42	M	2½	.....	E	..	..	—
43	M	9½	.....	..	D	+	..
44	M	7½	.....	..	D	..	—
45	F	10	.....	..	D	..	—
46	M	5	.....	E	..	..	—
47	F	6½	.....	..	D	..	—
48	F	3	.....	E	..	..	—
49	F	5	.....	E	..	..	—
50	M	7	.....	E	..	..	—
51	M	10	.....	..	D	..	—
52	M	9	.....	E	..	..	—
53	M	6	.....	E	..	..	—
54	M	4½	.....	E	..	..	—
55	M	8½	.....	E	..	+	..
56	M	9	.....	E	..	..	—
57	F	7	.....	E	..	..	—
58	M	6	.....	E	..	..	—
59	F	6	.....	E	..	..	—
60	F	10	.....	E	..	+	..
61	F	7	.....	E	..	..	—
62	F	9	.....	E	..	..	—
63	F	7	.....	..	D	..	—
64	M	7	.....	E	..	..	—
65	F	10	.....	E	..	..	—
66	M	4	A (2)	..	..	..	—
67	M	2½	.....	..	D	..	—
68	M	10	A (2)	..	..	..	—
69	F	6	.....	E	..	..	—
70	F	8	C	..	..	..	—
71	F	5	.....	E	..	..	—
72	M	9	.....	E	..	..	—
73	M	6	.....	E	..	..	—
74	M	6	A (2)	..	..	..	—
Total	**39 M, 35 F**		**13†**	**47**	**14**	**13‡**	**61**

* Table 2, section 6.

† One of these patients was 2½ years old, while the other 12 were in the last quarter of the first decade.

‡ Of the 13 cases microscopically positive for fungus, 4 were clinically positive, 6 clinically negative and 3 (clinically) unrecorded.

SUMMARY

1. The purpose of this study was to determine the degree of prevalence of ringworm of the feet among patients who frequent dispensaries.

2. Various opinions are cited as to the prevalence, introduction and manner of dissemination of the disease in this country.

TABLE 5.—*Relative Frequency of the Clinical Types of Ringworm of the Feet Among Patients in the Symptomatic and Asymptomatic Groups*

Clinical Varieties	Symptomatic,* per Cent	Asymptomatic,† per Cent
A (Intertriginous)	50	62.0
B (Vesiculopustular)	36	0.0
C (Scalyhyperkeratotic)	14	17.2
D (Unrecorded)	...	.....
E (Clinically negative)	0	20.8‡
Total	100	100

* Table 1, section 5.
† Table 2, section 6.
‡ First decade, 6.2 per cent; all other decades, 14.6 per cent.

TABLE 6.—*Relative Frequency of Positive and Negative Results of the Microscopic Examination for Fungus in Patients in the Symptomatic, Asymptomatic and Clinically Negative Groups*

	Clinical Lesions				Microscopic Examination for Fungus			
	Present		Absent		Positive		Negative	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Symptomatic (50 cases)*	50	100.0	...	.....	46	92.0	4	8.0
Asymptomatic (1,023 cases)†	508‡	79.2	157‖	20.8	529	51.7	494	48.3
Clinically negative (157 cases)#	...	.....	157	100.0	64	40.8	93	59.2

* Table 1.
† Table 2.
‡ Footnote *, table 2, section 6 (A and C).
‖ Footnote #, table 2, section 6 (E).
Table 3.

3. The point is particularly stressed that, epidemiologically, ringworm of the feet should be considered as existing in two forms, symptomatic and asymptomatic. The latter variety may be subdivided into two groups, one with clinical lesions, i. e., a clinically positive growth, and one without, i. e., a clinically negative group.

4. A series of 1,073 patients, over 2½ years of age, seen consecutively in the dispensary, were studied during a period of exactly one year.

5. Symptomatic ringworm of the feet occurred in 50, or 4.7 per cent of these patients. Of this number, the first microscopic examination for fungus gave positive results in 46, or 92 per cent.

6. A series of 755 cases were studied clinically for the presence of asymptomatic ringworm of the feet. Of this number: (*a*) a total of 598, or 79.2 per cent, had lesions clinically suggestive of ringworm of the feet (i. e., they were clinically positive), and (*b*) a total of 157, or 20.8 per cent, had no apparent lesions of the feet or toes (i. e., they were clinically negative).

7. A total of 1,023 asymptomatic cases were studied microscopically for the presence or absence of ringworm fungi. Of this number, 529, or 51.7 per cent, were positive and 494, or 48.3 per cent, were negative for fungus.

8. Of the 157 clinically negative asymptomatic cases that also were studied microscopically, it was found that 64, or 40.8 per cent, were positive and 93, or 59.2 per cent, were negative for fungus.

9. Eighteen, or 36 per cent, of the group of patients with symptomatic ringworm of the feet had the vesiculobullous type of the disease.

10. No patient in the entire group of 755 recorded cases with asymptomatic ringworm of the feet could be classified in the vesiculobullous category.

CONCLUSIONS

1. Ringworm of the feet occurs epidemiologically in two varieties, symptomatic and asymptomatic.

2. A certain portion of asymptomatic cases are apparently clinically negative and yet are microscopically positive for fungus.

3. Asymptomatic cases are potentially symptomatic and constitute potent factors in the dissemination of the disease.

4. Symptomatic ringworm of the feet today shows almost, if not quite, as high a percentage of incidence in patients who visit dispensaries as it does in private patients. It occurs in the lower social and economic strata of society with virtually the same degree of frequency as in the higher.

5. Asymptomatic ringworm of the feet, from both the clinical and the microscopic point of view, shows an incidence among patients who frequent dispensaries so high as virtually to equal that for private patients.

6. Ringworm of the feet today ranks as one of the most common if not actually, the most common, of all diseases of the skin.

7. The intertriginous and hyperkeratotic clinical types occur in the asymptomatic cases with approximately the same degree of frequency that they do in the symptomatic variety of the disease.

8. The vesiculobullous type of epidermophytosis of the feet is rarely if ever, found, in asymptomatic cases (it was not revealed in this study). If and when it does occur, it evokes symptoms of such intensity as to force the patient to seek relief. Thus it may be concluded that the vesiculobullous type occurs only in the symptomatic variety of ringworm of the feet.

TREATMENT OF PSORIASIS

CONTINUED OBSERVATIONS ON THE USE OF CRUDE COAL TAR AND ULTRAVIOLET LIGHT *

WILLIAM H. GOECKERMAN, M.D.
ROCHESTER, MINN.

In 1925, I published an article [1] on the treatment for psoriasis by an ointment of crude coal tar and ultraviolet light. This treatment has given far better results than any method I have ever used. The advantages that I claimed for this treatment were its uniform effectiveness, its lack of danger and even untoward symptoms, its nondestructive character, its accessibility and its comparative cheapness. Further experience justifies these claims, and in some respects establishes the method as being unique in its therapeutic results.

DEVELOPMENT OF THE METHOD OF TREATMENT

It has long been known that most patients with psoriasis are better in summer than in winter, that a sojourn in a locality with much sunshine is beneficial, and that sunbaths alone will clear up some attacks. Therefore, it was argued that if it were possible to sensitize the patches artificially, the response to light should be more prompt and the involution more rapid. To this end, various fluorescent substances and some with known photosensitizing qualities were tried. Chief among these were sodium chloride, quinine, eosin and rose bengal. None of these gave satisfaction. The use of hematoporphyrin was given consideration, but as there was some delay in obtaining a supply, crude coal tar was given a trial, chiefly because of its complex character. It was apparent almost at once that this substance, when applied to a patch and exposed to light, was effective, but whether the original conception as to the mechanism of therapeutic efficacy is correct is debatable. Herrick and Sheard have shown that a photochemical change occurs when crude coal tar is exposed to ultraviolet light. It is possible, therefore, that a new chemical is formed which exerts its beneficial effect by stimulating keratinization or antiseptic action, or by some other mechanism. On the basis of the possibility that a single fraction in the crude tar is responsible for the therapeutic result, efforts have been made, in conjunction with

* Submitted for publication, Feb. 3, 1931.

* From the Section on Dermatology and Syphilology, the Mayo Foundation.

1. Goeckerman, W. H.: Treatment of Psoriasis, Northwest Med. **24**:229 (May) 1925.

Herrick and Sheard,[2] to obtain fractional distillates containing the active substance, so far, however, without signal success. Since the tar was used in an ointment base, the effect of olive oil, petrolatum, cod liver oil, ergosterol and viosterol, without the tar, has been tried repeatedly, without success. Since tar applied in pure form is effective, it can be said, without hesitancy, that tar as such contains the desirable substance. Thus far, it has been impossible to obtain the same effect with any other material.

TECHNIC

Patients with psoriasis are usually hospitalized when they come to the Mayo Clinic, because most of them come from a considerable distance and hospitalization permits more perfect control of the details of technic. Hospitalization, however, is not necessary, and under many conditions ambulatory treatment may be preferable.

Under hospital conditions, an ointment containing from 1 to 5 per cent crude coal tar is applied about ⅛ inch (3 mm.) thick to the various patches, whether large or small. The formula for this ointment is as follows: crude coal tar, from 0.5 to 1.5 drachms (2 to 6 cc.); zinc oxide, 1 ounce (30 Gm.), and enough petrolatum to make 4 ounces (120 Gm.).

The ointment is permitted to remain on the patches until the next day, up to the time at which the technician who operates the air-cooled quartz lamp is ready for the patient's exposure. The excess of the ointment of crude coal tar is then removed with olive oil; a thin film, enough to look like a brown stain, is purposely allowed to remain. These stained patches are then exposed to the quartz lamp, beginning with a light exposure so as to avoid any particular reaction from the light. With the ordinarily employed well functioning lamp, a beginning exposure of one minute at a distance of 30 inches (76 cm.) is practicable. The exposure is given daily, and is lengthened by half a minute until from four to five exposures have been given. The average patient has now acquired considerable tolerance, and the time of exposure may be lengthened rapidly and the distance shortened. There is no necessity of producing severe erythema; gradual tanning is the object desired. The quartz lamp should be in proper order, and persons sensitive to light should not be exposed to the light too long or at too short a distance. Following exposure to the light, the patient is permitted to take a bath with soap and water, or, if his skin is sensitive, an oatmeal and soda bath. In order to give the patient a few hours of comfort, the ointment is not reapplied for several hours. The whole procedure is repeated daily. Mild conditions clear up in from two to three weeks and severe conditions in from three to four weeks.

The treatment given ambulatory patients is in all essentials the same as that given patients in the hospital; minor points are modified to meet the convenience of the patient, and to permit him to continue his ordinary occupation. The ointment is applied at bedtime and is removed in the morning; the patches are exposed promptly, a cleansing bath is taken, and the patient is not hampered by uncomfortable applications during the day. It is desirable, of course, that the patient use old underwear and bed clothing during the course of treatment, although the

2. Herrick, Julia; and Sheard, Charles: Effects of Irradiation of Crude Coal Tar by Quartz Mercury Vapor Lamps: I. Evidence of Chemical Changes as Shown by Changes in Absorption Spectra, Proc. Soc. Exper. Biol. & Med. **26**:33 (Oct.) 1928.

tar is not permanently injurious to clothing. While the glabrous skin is being treated by the tar and light, the scalp and nails, in event of their involvement, are treated by 20 per cent ointment of ammoniated mercury. This is thoroughly rubbed in and can be readily removed by soap and water.

REVIEW OF CASES OF PSORIASIS OBSERVED SINCE JAN. 1, 1925

Since psoriasis varies so much in its clinical behavior in different cases, and even in the same case in different attacks, it always has been difficult to evaluate the merits of any particular method of treatment. The literature is replete with suggestions that have succeeded in a few cases but that have failed when put to a critical test. Therefore, it seems desirable to review in some detail the cases of patients treated systematically at the Mayo Clinic by coal tar and ultraviolet light since Jan. 1, 1925. From that time until Nov. 20, 1930, records of 936 cases of psoriasis have been made. In this series, 181 patients received one or more systematic courses of treatment. In 3 cases the treatment failed. In 133 cases (14 per cent) the psoriasis was associated with arthritis; in this group, 40 patients were treated. There were, among the total number, a group of 28 cases of exfoliative dermatitis secondary to the psoriasis, and in 19 of these treatment was given.

Most of the patients did not come to the clinic for consideration of the psoriasis. It was often of no significance, since there were many among them with generalized carcinomatosis, tumor of the brain and other severe organic nervous diseases, exophthalmic goiter, severe abdominal surgical lesions, and other conditions. The comparatively small number treated in proportion to the large number seen is therefore to be expected. Two of the 3 patients who did not respond to treatment had a rather strange type of the disease. One of these 2 patients, a man aged 44, had patches of psoriasis chiefly involving the hands and feet, including the nails, and also patches over the trunk and extremities. Pain in the extremities was severe, and hyperhidrosis of the hands and feet was marked. Arthritis was not present, and the general health was fair, except for the psoriasis. The other of these 2 patients, a man aged 40, had marked involvement of the feet, hands and wrists, including the palms. Severe arthritis varied in direct proportion to the course of the psoriasis. Aside from this, the patient's general health was good. In the third case of the 3 in which treatment was not effective, the disease was not of unusual type. The patient was a man, aged 23, with large patches of psoriasis distributed chiefly over the trunk and lower extremities. The nails were not involved. The patient's general health was good. I can offer no explanation for the failure in treatment.

About a fourth of the patients who were treated received more than one course and several received three or four courses, and 1

patient received five separate courses at intervals. The response was equally good. A patient who responded unusually rapidly the first time would do so subsequently; conversely, a slower response in a patient would be repeated. The intervals of freedom from eruption varied from a few weeks to several years; in this respect, the treatment does not differ from other methods. That direct treatment for the cutaneous patches by external measures can do no more than cause their disappearance seems quite evident. It is probable that psoriasis has a metabolic background, and this method of treatment was not intended to cause a profound impression on the course of the disease.

In the 40 cases of psoriasis with arthritis in which treatment was given, one was periodically impressed with the fact that as the cutaneous patches disappeared, the arthritis improved. It was as though the psoriatic patches contained or elaborated a substance that aggravated the arthritis. The psoriasis responded as readily as in the cases without arthritis, but in only about half of the cases can it be said that the arthritis responded as the result of the treatment for the cutaneous patches. It was impossible to determine whether the arthritis was part of the psoriatic process in all of the cases. Many of the cases were typical of arthritis which slowly develops in the later years of psoriasis and which often produces pronounced deformity and general incapacity, and every effort was made to include only cases to which the term "arthritis psoriatica" might be applied. This is difficult, owing to the ill defined character of chronic arthritis and the unknown etiology of psoriasis. That arthritis should have existed before there were cutaneous manifestations does not necessarily mean that the arthritis is not part of a psoriatic disturbance. It can be said that arthritis psoriatica will respond to treatment for the skin patches in some cases, but that lack of response does not indicate that the arthritis is of a different type from that known as arthritis psoriatica. There is still an unknown factor that determines the variation in the response. However, these conclusions are based on only 40 cases in which treatment was given, and it is possible that a large series, intensively studied, might modify these observations.

In the 19 cases of exfoliative dermatitis secondary to psoriasis in which treatment was given, the response to treatment was the same in time and manner as the response of psoriasis by itself. A series of 19 cases is not large, but considering the uniformly good results, especially when contrasted with the course of events in the 9 cases in which other measures of treatment were used, the value of the method is evident. It is especially in this group, so often exceedingly refractory to treatment, that the unique efficacy and value of the method have made itself evident as experience has increased.

SUMMARY AND CONCLUSIONS

The use of tar and ultraviolet light in the treatment for psoriasis is the outgrowth of a persistent effort, not to "cure," but more effectually to control individual attacks. There is no evidence that this treatment will in any way fundamentally modify the course of the disease. Intervals of freedom from eruption are probably not determined by it. Psoriasis associated with arthritis responds symptomatically as well as psoriasis without arthritis. For some unknown reason, the arthritis is materially benefited in about half the cases by treating the lesions of the skin. A small percentage of cases with rather distinctive clinical manifestations does not respond well to the treatment. Its beneficial effect in exfoliative dermatitis secondary to psoriasis is unique. It is not recommended as a measure to be applied as a routine for a few patches of psoriasis, as other efficacious methods are more simple, but it can often be used without materially interfering with the patient's work. The scalp and nails do not lend themselves to this method of treatment. It is a decidedly valuable method for clearing up temporarily extensive and resistant eruptions on the glabrous skin, and practically always succeeds when various forms of treatment by roentgen rays, chrysarobin or other substances and methods have failed or are contraindicated. The principles of the treatment must be applied and the simple technic mastered, or success cannot be expected.

News and Comment

CONFÉRENCE INTERNATIONALE DE DÉFENSE SOCIALE CONTRE LA SYPHILIS; CENTENAIRE D'ALFRED FOURNIER

The Conference on Syphilis will be held in Paris on May 9, 10 and 11, 1932, and the Centenary of Alfred Fournier will be celebrated on May 12, 1932. The committee on celebration of the Centenary of Alfred Fournier is as follows: Dr. Jean Darier, Dr. William Dubreuilh, Dr. Pierre Menetrier and Dr. Gabriel Pouchet, Honorary Presidents; Dr. Lucien Hudelo, President; Dr. Sicard de Plauzoles, Secretary General. Dr. Hudelo is president and Dr. de Plauzoles secretary general of both the conference and the centenary celebration, and information concerning either may be obtained from the Secretary General, 44 rue de Lisbonne, Paris.

Abstracts from Current Literature

Edited by Dr. Robert Rattner

Efficiency of Scarlet Fever Antitoxin. Taketo Tsuda, Am. J. Dis. Child. **41**:747 (April) 1931.

In a study of sixty-two cases of scarlet fever in which antitoxin was given, Tsuda concluded that scarlet fever antitoxin has a marked therapeutic effect if given within twenty-four hours after the onset of the disease. No effect is to be expected when the injection is given seventy-two hours after the onset of the disease.

Excessive Ultraviolet Irradiation; Effect on the Nutrition and the Endocrine Glands of Rats. A. F. Hess and P. E. Smith, Am. J. Dis. Child. **41**:775 (April) 1931.

Two series of rats were irradiated with the mercury vapor lamp for a period of from five to six months or were given viosterol. Male as well as female animals were used. Those in the first series were litter mates; those in the second series, although not litter mates, were the progeny of the first series. Three intensities of irradiation were given, mild, moderate and severe. The viosterol was given in small, as well as in excessive amounts. The main object of the experiment was to note whether prolonged and intense irradiation or large doses of viosterol had a deleterious effect on the animals, as evidenced by the rate of growth and size and appearance of the endocrine glands.

The growth of the animals subjected to marked intensities of ultraviolet irradiation or given large amounts of viosterol was as good as that of animals that had lived under similar conditions, but that had not been subjected to irradiation or given viosterol. No difference was noted at necropsy between the endocrine glands of the treated and those of the untreated animals.

Tubercle Bacilli in Children with Erythema Nodosum; Demonstration by Gastric Lavage. Arvid Wallgren, Am. J. Dis. Child. **41**:816 (April) 1931.

Wallgren found that thirty-seven of forty children with erythema nodosum reacted positively to tuberculin. From seventeen of these thirty-seven children he was able to isolate the tubercle bacilli by means of gastric lavage. The exact technic of the procedure consisted in giving potassium iodide the day before the examination. The following morning before breakfast the child coughed for several minutes under the supervision of a nurse. The stomach was then washed out with 200 cc. of physiologic solution of sodium chloride. The material was centrifugated and the sediment injected into guinea-pigs.

In the majority of cases with a positive tuberculin reaction there were more or less enlarged hilar shadows, as shown by the roentgenograms. Tubercle bacilli were found in two (12.5 per cent) of sixteen children with no or insignificant hilar shadows, in four (50 per cent) of eight with moderate enlargement of the hilar shadows and in eleven (84.6 per cent) of thirteen with marked enlargement of the hilar shadows.

Wallgren concludes that children with erythema nodosum who give positive tuberculin reactions often excrete tubercle bacilli, and that enlarged hilar shadows in tuberculin positive cases of erythema nodosum are of tuberculous origin. He considers erythema nodosum to be of tuberculous nature and holds that children with this disease are often spreaders of the infection.

THE CORRELATION OF THE CLINICAL PICTURE WITH THE OSSEOUS LESIONS OF CONGENITAL SYPHILIS AS SHOWN BY THE X-RAYS. STAFFORD MCLEAN, Am. J. Dis. Child. **41**:887 (April) 1931.

Some twenty-one cases of congenital syphilis are presented, together with thirty-one illustrations, mostly roentgenograms. The clinical case reports are given, with roentgenograms to demonstrate the relationship of age to the type of lesion, and the relationship or lack of relationship of clinical manifestations to the osseous pathologic changes. Particularly demonstrative in certain cases was the severity of the infection as shown by the x-ray pictures of infants with unimpressive clinical manifestations.

ANDERSON, Los Angeles.

THE ARSENIC CONTENT OF THE HUMAN PLACENTA FOLLOWING ARSPHENAMINE THERAPY. NICHOLSON J. EASTMAN, Am. J. Obst. & Gynec. **21**:60 (Jan.) 1931.

It is generally recognized that treatment of the pregnant woman for syphilis is beneficial to the fetus. The striking effects obtained on the fetus in treated and untreated mothers suggest that the placenta may exert some protective function, although the exact mechanism is unknown. Twenty-one placentas from patients receiving prenatal arsphenamine therapy were analyzed for their arsenic content. No studies of this kind had been made before on human placentas. The method of Gutzeit was used. It was found that arsenic is retained by the human placenta for as long as fifteen days after the last treatment. There was a definite cumulative retention of arsenic, governed by the number of weekly injections that the patient had received. The retention of arsenic occurs chiefly in the fetal portion, which often contains as much as three or four times the amount in the maternal part. It seems probable that the increased retention of arsenic by the fetal portion of the placenta is an important factor in the successful antenatal treatment for syphilis.

ZIEGLER, Minneapolis [AM. J. DIS. CHILD.].

CHANGES IN SUGAR AND LACTIC ACID CONTENT OF BLOOD CAUSED BY BURNS. M. A. SLOCUM and H. D. LIGHTBODY, Am. J. Physiol. **96**:35, 1931.

The concentration of sugar and lactic acid in the blood of rabbits after superficial burns was studied both in otherwise intact animals and in animals that had been adrenalectomized. In both there was an increase in blood sugar and in lactic acid, but the increase in the latter was small and insufficient to account for the high value of the sugar. In the animals with intact adrenal glands, the heightened level of the sugar was maintained after twenty-four hours, but lactic acid was reduced below its initial value. Apparently the increased activity of the adrenal glands does not account for the increase in blood sugar through the intermediary of lactic acid, nor for that by decrease in the oxidation rate.

EGGERS, Omaha.

CUTANEOUS REACTIONS TO HISTAMINE: REACTIONS IN OCCLUSIVE AND SPASTIC VASCULAR DISEASE AND IN CHRONIC INFECTIOUS ARTHRITIS. J. M. CALDWELL, JR., and J. G. MAYO, Arch. Int. Med. **47**:403 (March) 1931.

The cutaneous reaction to histamine was found to be markedly delayed and reduced in each of nine cases of occlusive vascular disease of the extremities (thrombo-angiitis obliterans and arteriosclerosis). The reduction in the reaction was proportionate to the amount of the impairment of the circulation. The same results were obtained in a group of five cases of spastic vascular disorders (scleroderma, Raynaud's disease and a vasomotor neurosis). In three cases of this group there had been resection of the ganglions and trunk, and in each case less delay in the reaction was noted to coincide with an increased blood supply. In chronic infectious arthritis the reaction was found to be occasionally reduced.

ACUTE HEMATOPORPHYRIA; REPORT OF TWO CASES. V. R. MASON and R. M. FARNHAM, Arch. Int. Med. **47**:467 (March) 1931.

The report on two cases of acute hematoporphyria deals entirely with the question of the acute condition with internal symptoms. Hydroaestivale is commented on, but nothing new is offered.

CHRONIC ENDEMIC ERGOTISM: ITS RELATION TO THE VASOMOTOR AND TROPHIC DISEASES. JULIUS KAUNITZ, Arch. Int. Med. **47**:548 (April) 1931.

This discussion includes the possible relationship between vasomotor states artificially produced by ergot and ergotism in human beings to a vasomotor group including thrombo-angiitis obliterans, Raynaud's disease, erythromelalgia, acrocyanosis, scleroderma, sclerodactylia, etc.

It is considered possible that rye is heavily enough infected with ergot to account for some of the cases of these vasomotor and trophic changes. Further study, however, will be required to correlate the diet and the changes mentioned.

PELLAGRA SECONDARY TO BENIGN AND CARCINOMATOUS LESIONS AND DYSFUNCTION OF THE GASTRO-INTESTINAL TRACT. G. B. EUSTERMAN and P. A. O'LEARY, Arch. Int. Med. **47**:633 (April) 1931.

In this series of thirteen patients presenting pellagrous lesions, ten had benign lesions of the gastro-intestinal tract. These included duodenal ulcer, pyloric obstruction, gastric ulcer and gastro-enterostomy, ulcerative colitis and esophageal stricture. In two of the five patients operated on the outcome was favorable. The writers feel that every effort should be made to readjust the diet of these patients before any attempt is made to correct the dysfunction.

JAMIESON, Detroit.

PULMONARY SYPHILIS. MARY C. MCINTYRE, Arch. Path. **11**:258 (Feb.) 1931.

This is a review of pulmonary syphilis in the new-born infant and in the adult. It contains a statistical discussion of the frequency and the location of lesions and a full description of the various pathologic changes that are present. Pulmonary syphilis is differentiated from other diseases of the lungs on the basis both of pathologic changes and roentgenologic findings.

CARO, Chicago.

A CASE OF LEPROSY. B. USHER, Canad. M. A. J. **24**:640 (May) 1931.

A case of leprosy, of the mixed type, was seen in Montreal—the first case in that city since 1925. Apparently the patient contracted the disease while in active service in France during the World War, where one of his duties was to oversee Chinese laborers. There are two excellent photomicrographs.

INVESTIGATION OF THE FLORA OF THE LYMPHATIC GLANDS IN SKIN DISEASES OF UNKNOWN ORIGIN. GEORGE V. BEDFORD, Canad. M. A. J. **24**:640 (May) 1931.

In twenty cases of skin diseases of unknown origin, lymph glands were excised and examined for organisms. It was not clear to the abstractor just which glands were excised, the inguinal or those draining the involved areas of the skin. In fourteen cases of psoriasis, a diphtheroid organism was isolated from six nodes, a staphylococcus from three, and from five a diphtheroid organism together with a staphylococcus. A node from a patient with pityriasis rubra pilaris yielded a diplococcus, and from a patient with Darier's disease a hemolytic staphylococcus was recovered. In two cases each of seborrheic dermatitis and generalized eczema there were negative cultures. The author intends to report later on the use of autogenous vaccines in these cases.

IMPETIGO CONTAGIOSA NEONATORUM. J. J. SWENDSON and S. R. LEE, J. A. M. A. **96**:2081 (June 20) 1931.

The authors review their experience with four epidemics of this condition. The literature is extensively and critically reviewed, especially as to bacteriology, nomenclature, sources of infection and clinical course. They conclude that it is practically impossible to prevent the occurrence of sporadic cases of impetigo contagiosa neonatorum. Epidemics are best controlled by a three nursery system, which segregates infected babies, exposed babies and unexposed babies from one another. For the management of an active case the "dry treatment" is best. Each vesicle is opened with a cotton applicator dipped in alcohol, and the base of the lesion swabbed with a 5 per cent solution of silver nitrate. Taylor's dusting powder is then applied freely. It consists of mercurous chloride three parts, talcum two parts and zinc oxide one part. The powder stains the babies' clothes gray. Ointments were of no value in the experience of the authors. Preventive treatment is fully discussed.

HYPERSENSITIVENESS TO WOOL FAT. MARION B. SULZBERGER and JOSEPH L. MORSE, J. A. M. A. **96**:2099 (June 20) 1931.

Two cases are reported in which the patients were sensitive to wool fat. Both patients were of the group who "do not do well when treated with ointments." One patient was a salesman of wollen materials, the other a dress designer, and both had eczematous eruptions on the hands and forearms at varying intervals for a number of years. When ointments irritated, patch tests revealed the sensitiveness to wool fat. Under wet dressings the eruptions disappeared.

RATTNER, Chicago.

SUGAR CONTENT OF SKIN AND MUSCLE IN DIABETIC AND NON-DIABETIC PERSONS. H. C. TRIMBLE and B. W. CAREY, JR., J. Biol. Chem. **90**:655, 1931.

The elevation in the concentration of sugar in the blood that characterizes diabetes is accompanied by a marked increase in the sugar contents of the skin and muscle. The average sugar contents of the skin and muscle of nondiabetic persons are 56 and 28 mg. per hundred cubic centimeters, respectively. In diabetes, these averages may reach 144 and 51 mg.

LOCKE.

STUDIES IN THE SEROLOGY OF SYPHILIS: IV. A MORE SENSITIVE ANTIGEN FOR USE IN THE WASSERMANN REACTION. HARRY EAGLE, J. Exper. Med. **53**:605 (May) 1931.

This is a technical laboratory paper in which the writer expresses the belief that a new sensitizing agent called sitosterol can be added to antigen in much larger quantities than those in use without impairing the value of the reaction. The preparation of this sensitizer is given in detail.

STUDIES IN THE SEROLOGY OF SYPHILIS. V. THE CAUSE OF THE GREATER SENSITIVITY OF THE ICE-BOX WASSERMANN: THE ZONE PHENOMENON IN COMPLEMENT-FIXATION. HARRY EAGLE, J. Exper. Med. **53**:615 (May) 1931.

To explain the zone phenomenon, the writer concludes: "The serum protein is probably adsorbed . . ., forming a protective film which prevents the fixation of complement (e. g., a 1:5 dilution may be positive, yet may be negative when tested undiluted).

He regards the greater sensitivity of the icebox test as due to the fact that such serum inhibition is less marked at low temperatures; to the prolonged incubation; to a more marked nonspecific destruction of complement, and to a spontaneous deterioration in the longer icebox test.

JAMIESON, Detroit.

CONGENITAL PROTEIN HYPERSENSITIVENESS IN TWO GENERATIONS. B. RATNER and H. L. GRUEHL, J. Exper. Med. **53**:677, 1931.

Hypersensitivity actively induced in utero is shown to persist for a longer period than passive sensitization. The degree of hypersensitivity, its duration and its transmissibility appear to be influenced by the time elapsing between the original injection of the sensitizing substance into the parent and parturition. A pregnant guinea-pig receiving a parenteral injection of antigen from two to four days prior to parturition transmits a state of hypersensitivity to two succeeding generations. The sensitization of the first generation is due to the passage of antigen. The sensitization of the second generation is due to the passage of antibodies formed in the first generation. This prevents any further transfer of the hypersensitive state. Though hypersensitivity occurs in two successive generations, the phenomenon is congenital and not hereditary. We believe that this phenomenon demonstrated in the guinea-pig is fundamentally related to the problem of congenital sensitization of the human being. AUTHOR'S SUMMARY.

STUDIES ON TRANSMISSIBLE LYMPHOID LEUCEMIA OF MICE. J. FURTH and M. STRUMIA, J. Exper. Med. **53**:715 (May) 1931.

Lymphoid leukemia of the mouse was found to be readily transmissible intravenously; some of the inoculated mice developed aleukemic lymphadenosis, but this is believed to be identical with the leukemic variety. Following the inoculation there was an aleukemic stage with the lymph node and splenic enlargement. The white blood count and that of the lymphocytes were within normal limits, but immature lymphocytes were found.

These studies favor the view of mammalian leukemia as a neoplastic disease, the problem being to determine the factors changing the lymphoid cells from benign to malignant. JAMIESON, Detroit.

THE USE OF TRICHOPHYTIN AS A DIAGNOSTIC AND THERAPEUTIC AGENT IN MYCOTIC INFECTIONS OF THE SKIN. LAIRD S. VAN DYCK, JEROME KINGSBURY, BINFORD THRONE and C. N. MYERS, New York State J. Med. **31**: 611 (May 15) 1931.

This report deals with 100 patients whose disorders were diagnosed clinically as tinea or as one of the mycotic-like eruptions and who gave a positive reaction to the trichophytin test and were then treated with successive injections of trichophytin. The blood chemistry was investigated in all cases. Thirty controls with other skin diseases were tested and the results found to be negative. The treated patients were followed but a short time, the clinical results observed for the period being: apparently cured, 32 per cent; greatly improved 28 per cent; slightly improved, 21 per cent; unimproved, 19 per cent.

HEREDITARY HEMORRHAGIC TELANGIECTASIA: A REPORT OF TWO CASES. H. MASON HICKS and ELIZABETH KNOX, New York State J. Med. **31**:687 (June 1) 1931.

Several cases of hereditary hemorrhagic telangiectasia are reported, with a brief review of the literature since 1921, at which time it had been brought up to date by Goldstein. The latter found the cases of thirty families reported in the literature and added one of his own. Nineteen more cases are included in the present article, exclusive of the two noted by the authors. TRAUB, New York.

PHOSPHORUS, TOTAL CALCIUM AND DIFFUSIBLE CALCIUM CONTENT OF THE BLOOD SERA OF LEPERS AND THEIR RELATION TO BONE CHANGES. J. G. WOOLEY, Pub. Health Rep. **46**:641 (March 20) 1931.

The calcium and inorganic phosphorus content of the blood serum was found to be normal in forty-seven lepers. In fifty-three lepers the diffusible calcium and

the percentage of total calcium that was diffused averaged considerably below normal. Roentgenographic studies of the hands and feet showed atrophy of the bone (decalcification or absorption) in 91 per cent.

SANFORD, Chicago [AM. J. DIS. CHILD.].

ANNULAR LESIONS IN ACQUIRED AND CONGENITAL SYPHILIS. ERWIN P. ZEISLER, Urol. & Cutan. Rev. **35**:170 (March) 1931.

The author discusses the frequency of annular lesions in cases of acquired syphilis in Negroes. He also places on record five cases in which annular lesions developed shortly after birth in Negro infants with congenital syphilis. Photographs of the five patients are appended.

CARO, Chicago.

WOOD'S GLASS IN THE DIAGNOSIS OF RINGWORM. JOHN KINNEAR, Brit. M. J. **1**:791 (May 9) 1931.

Kinnear's experience with Wood's glass is that it is indispensable, but that it has some definite limitations. Hairs infected by *Microsporon audouini* are fluorescent in light filtered through Wood's glass, with a fluorescence that is a characteristic brilliant green, constant and coextensive with the infection. But hairs infected by other forms of ringworm cannot be detected by this method with any certainty. Hairs affected by favus give a faint fluorescence. Almost any scaly condition of the skin gives a fluorescence because of the fluorescent properties of keratin, but in microsporon ringworm infection the fluorescence is due to the presence of *M. audouini*. Petrolatum in the scalp gives an intense blue fluorescence, which may hide that due to ringworm. Any ordinary white light may be used for illumination, if it is of sufficient intensity, and ordinary glass does not impede the necessary rays, so that condensers, etc., may be used. The fluorescing properties of the different types of fungus are considered separately.

ACIDOSIS AND SEBORRHEA. JOHN T. INGRAM and F. S. FOWWEATHER, Brit. M. J. **1**:839 (May 16) 1931.

Three factors play a part in the production of most seborrheic conditions—a constitutional, an infective, and a precipitating factor. The seborrheic constitution is one of general functional instability, and this is dependent on either primary nervous instability, endocrine imbalance or an unrecognized biochemical abnormality. Hoping to find some clue to the character of the constitutional instability, the authors investigated the acid-base balance in the blood of seborrheic subjects. In the twenty-six cases studied, no evidence suggesting the presence of acidosis was found, nor was there increased excretion of acid in the urine. They were unable also to find evidence to support the alkaline treatment for seborrhea. The experiments are described in detail, and the pertinent literature is critically reviewed.

A CASE OF ERYTHRO-EDEMA. FRANK J. LEES, Brit. M. J. **1**:844 (May 16) 1931.

This is a report of an infant, aged 6 months, who presented the characteristic picture of a pink nose and pink cheeks set in a pale face, watery eyes, photophobia and an aspect of misery. The child was extremely restless and had fever, diarrhea alternating with constipation, and a pseudoparalysis of the cervical muscles and muscles of the legs. She recovered in five months under treatment that was purely symptomatic.

TABOPARESIS TREATED BY HYPERPYREXIA INDUCED BY HOT BATHS. C. R. GIBSON and R. G. GORDON, Brit. M. J. **1**:1015 (June 13) 1931.

Excellent clinical improvement was obtained in a case of taboparalysis by means of a series of hot baths. The temperature at times reached 106 F. The

patient had not had previous antisyphilitic therapy. There was no serologic improvement, but the clinical improvement was such as to allow the patient to return to his work.

GONOCOCCAL STOMATITIS. A. D. FRAZER and J. MENTON, Brit. M. J. **1**:1020 (June 13) 1931.

A case of this rare condition is reported in a young man who had also gonorrheal urethritis and ophthalmia. Two days after exposure he suffered from nausea and repeatedly inserted his fingers in his mouth to induce vomiting. The next day, he had discharge from the urethra and from both eyes; the following day, his gums became swollen, and there was a purulent discharge from the mouth. The whole of the mouth, the tonsils and the anterior half of the tongue were covered with a gray membrane. In addition, there were a few patches of superficial ulceration, chiefly around the molar teeth, probably produced by the action of food on the tongue. The gonococcus was recovered by direct smear and from culture. Treatment consisted of potassium permanganate mouth wash and vaccines, and the patient recovered in six weeks. Only about forty such cases have been recorded, and they are briefly reviewed with the report of this case.

PITYRIASIS FOLLICULORUM (DEMODEX). HERMAN LAWRENCE and ROBERT BRODIE, M. J. Australia **1**:529 (May 2) 1931.

Four cases of pityriasis folliculorum (*Demodex*) have been seen since Ayers first called attention to this condition. It was observed in three women and one man. *Demodices* were recovered in each case after the scales were treated with potassium hydroxide solution. In one patient the lesions clinically resembled those of impetigo pityroides. The lesions were coin-sized, reddish, scaly, sharply defined patches which readily cleared up with the use of parasiticide ointments. The organism differs from the one that causes *Demodex* impetigo (Whitfield). Its characteristics are described, and photographs are included.

RATTNER, Chicago.

SCARLATINIFORM EXANTHEM AND SEROTHERAPY IN THE COURSE OF DIPHTHERIA. P. BRUSA, Scritti med. dedicati a Carlo Comba, Ediz., Riv. di clin. pediat. **27**:426, 1929.

Frequently scarlatiniform eruptions are seen in patients with diphtheria who have received antitoxic serum. Some physicians are inclined to ascribe this rash to the serum, but the author is emphatic in claiming that it is true scarlet fever. The arguments in favor of its being true scarlet fever are: (1) a similar occurrence before the discovery of antitoxin, (2) the varying time of its appearance after the giving of the serum, (3) the frequent earlier, concomitant or later appearance of a true serum rash, and (4) typical desquamation. In Brusa's clinic at Bologna, the incidence of these cases was 2.08 per cent. Such cases have been carefully isolated there, so that the occurrence of the eruption has diminished.

HIGGINS, Boston.

MULTIPLE LOCAL NECROSES OF THE SUBCUTANEOUS FAT TISSUE. P. W. KOSCHEWNIKOW, Dermat. Wchnschr. **92**:613 (April 25) 1931.

A case is described in which numerous subcutaneous nodules of various sizes developed in the eighth month of pregnancy, on the abdomen and thighs and in the gluteal region. In one of these a fistula developed, the secretion from which showed leukocytes and fat droplets on microscopic examination. The nodules consisted of fat tissue undergoing coagulation necrosis surrounded by hyalinized connective tissue. A number of the nodules, especially in the gluteal region, broke down and the necrotic ulcers healed very slowly with deep scarring. The course

of the disease was exceedingly slow and stormy. The duration was more than two years. The fat necrosis was considered to be due to emboli from some unrecognized infection.

A Contribution to the Etiology of Creeping Disease. A. Schwarz, Dermat. Wchnschr. **92**:620 (April 25) 1931.

A typical case of creeping disease in a 10 months old girl is described. The active end of the run was excised and in serial sections the larva of *Gastrophilus equi* was found. This is the fifth case reported as occurring in Poland.

Early Maximal Treatment of Primary and Secondary Syphilis. Erich Hoffmann, Dermat. Ztschr. **60**:375 (April) 1931.

The author reiterates his well known opinions on the value of intensive treatment of early syphilis, particularly in preventing nervous, hepatic and other recurrences.

The Meinicke Clearing Reaction: A Useful and Valuable Method for the Serologic Diagnosis of Syphilis. Leo Hauck, Dermat. Ztschr. **60**:379 (April) 1931.

In comparative tests done on 1,956 serums with the Meinicke clearing reaction, the original Wassermann reaction and Müller's clumping reaction, there was complete agreement in 91.2 per cent. In 413 syphilitic serums there was complete agreement in 65.6 per cent. The Meinicke test was more sensitive than the Wassermann in 29 per cent, it was more sensitive than the Müller test in 13.3 per cent of the cases, and it was less sensitive in 7.6 per cent. Nonspecific reactions occurred in from 0.5 to 0.76 per cent of the cases.

Direct Observation of Tubercle Bacilli in Lupus Pernio and in Sarcoid of Boeck. O. Dittrich, Dermat. Ztschr. **60**:395 (April) 1931.

One case of lupus pernio and one of sarcoid of Boeck are described. The differences as well as the similarities, both clinical and microscopic, are discussed. In each case tubercle bacilli were observed in the sections.

The Reaction of Human Sweat. Julius K. Mayr, Dermat. Ztschr. **60**:413 (April) 1931.

The hydrogen ion concentration of sweat depends on the location from which it is obtained and on the manner in which it is stimulated. That from the face and chest is more acid than that from the axillae. Heat produces a more acid sweat than does a drug such as pilocarpine. A group of ten patients were tested as follows: At 8 a. m., samples of sweat and urine were collected from the fasting patient, and half an hour later 10 cc. of 10 per cent hydrochloric acid was given in 300 cc. of water. Two hours later, 30 Gm. of sodium bicarbonate was given in 300 cc. of water. In some instances 5 Gm. of urea was also given. The hydrogen ion concentration of axillary and chest sweat and of the urine was measured at intervals and graphic tables were made. The p_H value of the urine reached its highest point in five hours, and that of the sweat a few hours later.

Medical Treatment of Lupus Vulgaris. Hans Rock, Dermat. Ztschr. **60**:421 (April) 1931.

Mercury ointment locally and a salicylic acid preparation internally healed or at least benefited more than half of the patients with lupus vulgaris in a series of twenty-four. Seven of the patients received no benefit.

HETEROCHROMIA OF THE HAIR. A. BRAUER, Dermat. Ztschr. **60**:438 (April) 1931.

Two girls, identical twins, were observed, each with almost identically symmetrical distribution of tufts of light blond hair. The rest of the head was covered with dark blond hair. There was no change in the color of the scalp in the areas affected. The author considers the condition a nevus (nevus heterochromicus pilorum).

SERUM THERAPY OR INTENSIVE ULTRAVIOLET IRRADIATION FOR ERYSIPELOID. MÜHLPFORDT, Dermat. Ztschr. **60**:445 (April) 1931.

Two cases of erysipeloid are reported in which the patients were not cured by injections of immune serum but responded to intensive ultraviolet irradiation. The author has used this treatment in thirty-seven cases successfully, and considers it the treatment of choice on account of its safety and reliability.

ANIMAL EXPERIMENTS CONCERNING THE DEPENDENCE OF THE EFFECT OF ARSPHENAMINE ON THE CONDITION OF THE RETICULO-ENDOTHELIAL SYSTEM. CARL SCHUMACHER, Dermat. Ztschr. **60**:469 (April) 1931.

The reticulo-endothelial system was "blocked" in a series of mice by the intravenous injection of a solution of saccharated ferric oxide (ferri oxidum saccharatum solubile). Some of these had been previously splenectomized. Moderate doses of neoarsphenamine were found to be more toxic for the blocked animals, either with or without splenectomy, than for normal animals. Furthermore, infection with relapsing fever was more difficult to cure in the blocked animals. Following intravenous injections of neoarsphenamine the arsenic content of the blood was less in the experimental animals than in the controls, but this difference did not occur when the neoarsphenamine was given cutaneously.

EXPERIMENTAL AND CLINICAL EXPERIENCES WITH THE OBLITERATION OF VARICOSE VEINS. J. DÖRFFEL, Dermat. Ztschr. **60**:477 (April) 1931.

A continuation of previous clinical experience with dextrose and with sodium chloride in the injection treatment for varicose veins confirms previous opinions of the usefulness of these agents. Compound solution of iodine was found satisfactory in experimental animals as well as in a few patients. It is suggested as a possible improvement on the other solutions for this purpose.

QUANTITATIVE AND QUALITATIVE DETERMINATIONS OF THE HUMAN SKIN FAT. REINHOLD PACHUR, Dermat. Ztschr. **60**:486 (April) 1931.

The normal fat content of 4 sq. cm. of the forehead was found to be from 0.4 to 0.48 mg. in adults. This value was higher for subjects at puberty and lower in old age. It was increased in patients with seborrhea, eczema, folliculitis and acne, and decreased in seborrhea sicca and in acrodermatitis atrophicans. Qualitative analyses showed: 88.26 per cent neutral fat, 4.2 per cent cholesterol esters, phosphates and soaps and 7.54 per cent cholesterol.

A COMPARISON OF THE WASSERMANN AND THE MEINICKE CLOUDING (TRÜBUNG) REACTIONS. L. ABRAMSON, Dermat. Ztschr. **60**:491 (April) 1931.

A total of 2,865 serums were studied, 1,060 of which were syphilitic. The general agreement between the Wassermann and Meinicke tests was good, but the Wassermann test was found to be indispensable, especially in early syphilis. One of the precipitation tests should be used in conjunction with the classic test in controlling the course of treatment.

TAUSSIG, San Francisco.

STUDIES ON IMMUNITY IN EXPERIMENTAL SYPHILIS: I. SUPERINFECTION WITH VARIOUS DILUTIONS OF VIRUS EMULSION (MEASUREMENT OF THE GRADE OF IMMUNITY BY QUANTITATIVE METHOD). N. KATO, Lues, Bull. Soc. Japon. de syph. **6**:1 (Feb.) 1931.

The virus emulsion used for inoculation was prepared from orchitic tissue, the lymph node in the chancre region of syphilitic rabbits or the internal organs of syphilitic mice. With these three materials three groups of rabbits were inoculated intracutaneously in eight spots of the back, the virus emulsion being diluted in various proportions. The lesions, their size, the period of incubation, etc., following the intracutaneous injections were compared, and were found to be proportional to the dilutions or the quantity of the virus.

This quantitative method of inoculating with virus was utilized with benefit in testing the grade of resistance shown by animals that had been inoculated previously with spirochetes from mouse syphilis (an experiment in superinfection). From eight to fifty-three days after the original infection, the rabbits were inoculated intracutaneously on the back with 0.5 cc. of virus emulsion prepared from orchitic lesions and diluted in various proportions. The results were as follows: The percentage of successful superinfection diminished as the time after the first infection increased, the decrease becoming more rapid from the thirty-sixth day, and finally it descended to zero. The evidence of resistance due to the first infection was noted even on the eighth day in the quantitative test; it became gradually more marked as time went on, and finally there were no "takes." This was also substantially true with regard to the size of the local lesion; the chancres due to the inoculation were decidedly smaller from the thirty-first day after the first infection than in the controls.

The local manifestations due to superinfection in an infected animal became slighter with the lapse of time after the infection. Exceptions to this were seen in cases in which the intervals between the first and the second infection were thirty-two, thirty-three and thirty-four days, respectively, in which the chancres thus produced were rather larger than in the controls, generalized lesions appearing simultaneously (allergy?).

SPIROCHAETA PALLIDA IN THE REGIONAL LYMPHATIC NODES IN SYPHILITIC MICE. N. KATO, Lues, Bull. Soc. japon. de syph. **6**:44 (Feb.) 1931.

Kato made a painstaking examination of the fluctuation in the number of spirochetes in the lymphatic nodes of the mouse following cutaneous inoculation. The lymphatic node in the iliac region was examined after scrotal inoculation with 0.25 cc. of virus emulsion, the node being excised at various intervals after infection. Well marked evidence of a proliferation of spirochetes in the gland was noted.

Kato measured the lymphatic glands and divided them into five portions, each of which was shredded on an object glass in order to make an emulsion of the tissue, fifty microscopic fields beings carefully examined under dark-field illumination. According to the author, a thorough investigation of the distribution of spirochetes is highly desirable before any tenable hypothesis may be advanced as to the apparent latency of syphilis in the mouse and as to the apparent absence of spirochetes in an organ such as the lymphatic node.

CHANGES IN THE LYMPHATIC SYSTEM IN EXPERIMENTAL SYPHILIS OF THE RABBIT (INVOLVEMENT OF REGIONAL LYMPHATIC NODES IN TESTICULAR SYPHILIS). S. YOSHIDA, Lues, Bull. Soc. japon. de syph. **6**:58 (Feb.) 1931.

The author inoculated syphilitic virus into the testes or scrotums of rabbits, removed the regional lymph glands and examined them under dark-field illumination and histologically. Some were examined histologically after intravenous injection of lithium carmine. The regional adenitis appeared usually a few days

after the inoculation. The presence of spirochetes in these enlarged glands can be proved by animal inoculation and with much more difficulty by means of the silver stain. Histologically, the glands show only inflammatory proliferation.

EXPERIMENTAL SYPHILIS AND YAWS IN RABBITS INOCULATED THROUGH THE SUBARACHNOID SPACE. ZENSETSU OHYA and HYOZO MISAIZU, Lues, Bull. Soc. japon. de syph. **6**:69 (Feb.) 1931.

The cerebrospinal fluid of rabbits inoculated with syphilitic virus through the subarachnoid space showed no syphilitic changes, although the spirochetes passed the encephalohematic barrier and appeared in the blood, causing a general syphilitic infection. Of thirty rabbits, ten showed nasal lesions after an average of sixty-five days; in eighteen the Bordet-Wassermann and the Sachs-Georgi reactions became positive after an average of forty-six days. In six rabbits orchitis appeared after an average of forty-four days. Eye changes were uncertain because the ocular puncture used to obtain ocular fluid left lesions that did not permit one to state the origin of any changes.

The same findings are reported for the cerebrospinal fluid of rabbits inoculated with yaws.

BLOOM, New York.

THE MODERN TREATMENT OF LUPUS ERYTHEMATOSUS. TYSCHNENKO, Ukrain. med. visti **1**:118, 1931.

This is a complete review of the modern treatment for lupus erythematosus. First, various kinds of gold preparations are mentioned, and the author cautions that it is necessary to start with very small doses because of the severe toxicity of the drug. In some cases, he recommends the use of trivalent arsenicals or bismuth. He has had no experience with the use of vaccines in lupus erythematosus, but warns against the use of tuberculin injections. General hygiene, normal function of all the vital organs of the patient and regulation of the diet are important to insure successful treatment. Supportive treatment with arsenic, phosphorus, iron and cod liver oil is very useful. The author mentions also carbon dioxide snow, radium, Alpine and Kromayer lamps and many forms of peeling and soothing ointments and lotions for local treatment. He absolutely rejects treatment with roentgen rays, as it has no effect on lupus erythematosus and sometimes is even harmful. It is possible with all these methods to remove or at least to ameliorate the symptoms of lupus erythematosus. However, much attention and skill are demanded from the attending physician.

ASTRACHAN, New York.

Society Transactions

BROOKLYN DERMATOLOGICAL SOCIETY

A. M. Persky, M.D., *Secretary*

Dec. 15, 1930

A. Walzer, M.D., *Presiding*

Epithelioma in a Syphilitic Tongue. Presented by Dr. Louis Chargin.

The patient was a married man aged 65. His wife had been pregnant but once, and it resulted in a miscarriage. The patient said that he had had a chancre about thirty-five years previously and that he had received treatment over a very short period of time. About four years before presentation he had an eruption on the body for which he took about 700 tablets of "orthodox pills." The eruption disappeared while he was taking the pills. Several months before his presentation a sore developed on the left margin of the tongue opposite the molar teeth. This lesion gradually increased in size.

On presentation he showed a round lesion, the size of a nickel, on the margin of the tongue. It was raised and round, with an uneven central portion, and the border was raised and hard to the touch. The glands on the corresponding side of the neck were enlarged and hard. The lesion was somewhat tender. Near the buccal commissures there was some leukoplakia. The patient's general health was not affected. His oral hygiene was bad. The Wassermann reaction was 4 plus. He was given two injections of bismuth and one of neoarsphenamine. The lesion improved slightly.

DISCUSSION

Dr. E. A. Gauvain: This man has syphilis and leukoplakia. A carcinoma has developed on the leukoplakia. I believe this to be inoperable.

Dr. J. C. Graham: I do not believe that any treatment will cure this condition for it is too far advanced. I know that such far advanced cases are treated, but I have never seen one that I did not think was made worse by any form of therapy.

A Case for Diagnosis. Presented by Dr. William H. Best.

E. M., aged 27, a white woman, married, was born in the United States. She presented herself at the Long Island College Hospital on Nov. 17, 1930, complaining of pain and burning of the tongue, with occasional swelling. The condition was of one year's duration. The past history was irrelevant. Examination revealed a red denuded area on the under surface of the tongue, extending from the tip to the attachment, to the floor of the mouth and to within one-eighth inch of the border. On several occasions there were seen pinhead-sized superficial, ulcerated areas resembling "canker" sores. The blood count was normal and the Wassermann reaction negative.

DISCUSSION

Dr. E. A. Gauvain: I saw two or three small white areas in that lesion, but the epithelium completely covered the lesion. The patient's history of recovery symptomatically is quite definite. The attacks last about two weeks. A few days ago, she was hardly able to talk because of the swelling. At present it is retrogressing. I do not know the diagnosis or what to do for it.

PSORIASIS IN A NEGRO. Presented by DR. A. WALZER.

H. B., a Negro, 25 years of age, married, was a messenger. There was no history of syphilis in the patient's family. The condition commenced in May, 1930, when he had a urethral discharge. In June, bilateral buboes developed and the left one was incised. In August the eruption appeared and the Wassermann reaction was 4 plus. He was given twenty intravenous injections by some private physician. These injections were given twice a week, the last one about one month prior to presentation. The patient claimed that the rash disappeared for a week or so, and that it returned two weeks before presentation. On the penis, thighs and lower extremities there were many elevated, sharply outlined papules, from the size of a pea to that of a dime, scattered and arranged in annular formation. They were all surmounted with a thick mother-of-pearl scale, which on removal showed bleeding points. On the scalp, especially along the border, were pinkish patches with slight, if any, elevation; these were the size of a dime or a little larger, and their centers were violaceous. They apparently were disappearing lesions of the small type, like those on the legs. At the entrance of both canals of the ears were lesions similar to those on the legs. The nails showed no changes. The mucous membrane of the tongue showed two pea-sized patches in which the papillae were not pronounced. A Wassermann test was done, but no report had been received.

DISCUSSION

DR. E. A. GAUVAIN: I have never seen lesions of that character on the penis in psoriasis, and the character of the general eruption indicates syphilis rather than psoriasis.

DR. A. WALZER: The question whether it is psoriasis or syphilis may be difficult to settle. There are certain clinical differences which we ought to distinguish: first, the typical bleeding points on mild scratching; second, the silvery dry white scales; third, the fact when the scales are removed, no papule is left, but a flat surface. To my mind, the latter is probably the most important symptom. If it is a late syphilid, there must be a papule.

We occasionally see lesions on the mucous membranes in psoriasis of the type that the patient shows on the tongue. In a syphilid resembling psoriasis, one very important point is that one will not see a large patch and a small patch of syphilis. A psoriatic patch grows, but a syphilitic papule remains the same size. This patient shows lesions of all sizes. The lesions at the entrance of the ear canals (syphilis does not produce lesions on the ears) is a favorite location for psoriasis. Those on the scalp are dry, flat and not elevated and they are covered with a thin whitish scale.

NOTE: The Wassermann reaction was 4 plus. After one intravenous injection of arsphenamine, the lesions cleared considerably.

A CASE FOR DIAGNOSIS (PELLAGRA?). Presented by DR. M. J. CANTOR.

J. H., 54 years of age, a Russian Jew, was treated in 1922 at the Bellevue Hospital for two weeks for Buerger's disease of the lower extremities. He was in many other institutions for what was diagnosed as pulmonary tuberculosis and pseudopellagra. On presentation there was present purplish discoloration with pronounced marmoration from both hips to the toes. Nutritional changes were present on the toes. Similar discoloration was noted from the elbows to the fingers. The blood count was normal. Urinalysis and the Wassermann test gave negative results. Roentgen reports showed tuberculosis of both upper lobes.

DISCUSSION

DR. A. WALZER: When one says pellagra, one means a definite entity. Pseudopellagra should therefore not be used in the sense of a definite entity. The patient apparently has definite tuberculosis, and, as a result, symptoms or signs simulating pellagra may develop which have nothing to do with pellagra per se.

This is purely a manifestation of an intoxication probably due to tuberculosis simulating pellagra and it now shows evidence of intestinal involvement in the form of four or five attacks of diarrhea daily. The condition may be one of developing pellagra.

DR. M. A. LYONS: As a resident of a large state institution I saw several cases of pellagra. The lesions were distinctly bluish-red and sharply marginated, and involved the neck and hands. Besides, these patients were thin, had a watery stool and showed marked mental disturbance. Some even had neuritis. These patients died without recovery. The United States Public Health Service believes that pellagra is caused by a vitamin disturbance.

The patient presented here has alcoholism. About his neck is a pigmented, slightly atrophic and sharply marginated lesion. A similar eruption is on his hands up to the wrists. I would therefore be inclined to call this a case of pseudo-pellagra rather than true pellagra.

Jan. 19, 1931

A. WALZER, M.D., *Presiding*

DERMATITIS HERPETIFORMIS? Presented by DR. WILLIAM H. BEST.

A. Z., a white man, aged 78, born in Italy, complained of a generalized itching for twenty years. He was admitted to the Kings County Hospital on Dec. 1, 1929, presenting a nondescript, papular, disseminated eruption on the trunk. He left the hospital after a short period and was readmitted on Oct. 15, 1930. On readmission he presented a vesicular and bullous eruption on the trunk. The lesions were grouped, and there was intense itching. The surface was denuded where the vesicles and small blebs had broken. At the site of healed areas there was pigmentation.

The Wassermann reaction was negative. The urine contained albumin; otherwise it was normal. Chemical analysis of the blood showed: urea, 38, creatinine, 1.2, and sugar, 106 mg. An examination of the blood showed: red cells, 4,000,000, and white cells, 15,000, with polymorphonuclears, 74 per cent; small mononuclears, 21 per cent, and eosinophils 5 per cent.

DISCUSSION

DR. E. W. ABRAMOWITZ: One important clinical consideration is that the man is ill, and one marked characteristic of dermatitis herpetiformis is that the general health is unaffected. The condition seems to be an exfoliative type of eruption. My diagnosis is pemphigus foliaceus. The Pels-Macht test should be performed.

DR. L. CHARGIN: If dermatitis herpetiformis and pemphigus are separate clinical entities, then this case should be included in the pemphigus group. In the first place, the primary lesion is a large bulla. The tops of many of these bullous lesions have come off, and as a result the patient presents large areas of denuded skin. This characteristic and the presence of Nikolski's sign are points that indicate a diagnosis of pemphigus.

DR. J. SKEER: I think that the condition is pemphigus foliaceus.

PEMPHIGUS? Presented by DR. L. CHARGIN.

R. M., aged 45, a clerk, married twenty-three years and the father of five children, presented a condition which had started about one year previously at the sides of the temples and then had spread to the rest of the face. The condition had disappeared completely, but a recurrence had occurred soon afterward.

At first the eruption was limited to the face and the scalp; recently, however, it had appeared on the body and occasionally there was a lesion in the mouth.

At the time of presentation the patient showed an eruption over the entire body; it was most marked on the face and the neck. The primary lesion was a bleb resembling that observed in multiform erythema and having a raised border and a depressed center with a red halo. The lesions were aggregated in groups of four or five. There were lesions in various stages of evolution and involution. At the outset there was itching; however this condition disappeared after the lesion was fully developed. Many lesions became hemorrhagic. The Pels-Macht test gave positive results. The test with potassium iodide in which 10 grains (0.65 Gm.) was given in two doses by mouth, caused the appearance of a marked bullous eruption in less than twenty-four hours.

DISCUSSION

DR. E. W. ABRAMOWITZ: I think that this case is one of erythema multiforme bullosum. One cannot disregard the iris lesions that are present in this case. It is also possible that this rash is caused by iodine as the patient seems susceptible to iodides. Pemphigus may start as dermatitis herpetiformis or as multiform erythema, and I have sometimes seen it develop after the primary diagnosis of weeping eczema was made. It would not surprise me if pemphigus ultimately developed.

DR. L. CHARGIN: The patient was never in robust health and was often ill in bed. The Pels-Macht test gave positive results, which favored the diagnosis of pemphigus. The test with potassium iodide resulted in an extensive bullous eruption that made the patient ill for a period of two weeks. Until recently the patient had had only a slight eruption on the body. Then the generalized eruption that is now present developed. The primary lesion is typical of multiform erythema; it is a large flat papulovesicle with an erythematous halo and a depressed center. This form is typical of practically all early lesions; they break rapidly and become encrusted. I do not think that the condition is dermatitis herpetiformis, in spite of the results of the test with potassium iodide; this reaction is probably present in many of the bullous diseases and is not characteristic of dermatitis herpetiformis alone.

DR. E. A. GAUVAIN: I agree with Dr. Abramowitz that the condition is multiform erythema.

DR. J. SKEER: My impression is that the condition is one of chronic pemphigus vulgaris. Crusting is present, and some of the lesions are vegetative.

SOLID EDEMA? Presented by DR. L. CHARGIN.

B. K., aged 16, a school boy, was treated for a condition of the sinuses for a period of three months during the winter of 1929 and was told that the sinuses were clear. No roentgen rays were used at the time. The face became swollen while the patient was under treatment. No operations were performed. The patient remained well until May, 1930, when a swelling of the side of the face under the eye developed. The swelling persisted with slight remissions. The left side was less affected than the right, and it became edematous. At the time of presentation, there was marked swelling of the right cheek and less marked swelling of the left cheek. The skin was red; there was no pitting. The condition was painless. Roentgen examination of the sinuses gave negative results.

DISCUSSION

DR. E. W. ABRAMOWITZ: I do not think that there is any doubt that the diagnosis in this case is solid edema. Usually, however, patients with such a condition give a history of a severe attack of erysipelas and then a series of milder attacks, the skin being left in a more edematous stage each time. A case was reported by Dr. Guy and me in which the streptococcus was found in the

perilymphatic spaces of the cutis. Such cases are now considered as being due to an adjacent focus of infection where the organisms have managed to get into the skin, which causes a block in the lymph flow with resultant solid edema. I have seen improvement follow the clearing of the infected focus, fractional superficial roentgen therapy and the use of a stock streptococcus vaccine.

DR. E. A. GAUVAIN: I am sorry that I did not see this patient. I had one patient in the office who had solid edema with a definite history of attacks of erysipelas. Fourteen one-quarter skin units of roentgen rays had been administered, at weekly intervals, with complete recovery.

DR. L. CHARGIN: With regard to the etiology, this patient has not had recurrent erysipelas. I propose to treat the patient with roentgen rays.

MENSTRUAL ECZEMA. Presented by DR. E. A. GAUVAIN.

M. C., an unmarried woman, aged 23, an American born of Italian parents, had had an eczematous eruption on the hands since she was 7 years of age. She was unable to give a definite history of the periodicity of the attacks before the menstrual function began; she had noticed, however, a definite connection between the eruption and the menstrual cycle which had begun when she was 13½ years of age. The eczema was more severe after menstruation started.

The patient had a discrete papular eruption localized on the hands, particularly the dorsa; they appeared generally about one week before the menstrual epoch began and disappeared about one week after the menses ceased, having a duration of two or three weeks. In the intervals, the hands were entirely free from the eruption. The intensity of the eruption varied during different months. Sometimes the condition was so severe that there were round, circumscribed groups of papulovesicles, resembling an area of trichophytosis. The patient had not been able to associate the difference in the intensity of the eruption with a greater disturbance during the menstrual period. She was the only daughter in a family of six children, and she did not give a familial history of skin disease.

DISCUSSION

DR. E. W. ABRAMOWITZ: I think that the case for a menstrual eruption is incomplete. How would Dr. Gauvain explain the presence of skin lesions in this patient before she began to menstruate? There are various possibilities: dermatophytid, external irritants (occupational, etc.) and idiosyncrasy to foods should be excluded.

DR. J. SKEER: So far as treatment is concerned, probably Whitfield's ointment will clear the condition. The patient removed shoe and stocking, and I saw a patch of epidermophytosis. I have no way of telling whether the same condition is present on the back of the hands, except that the history states that this condition was present before menstruation began.

DR. E. A. GAUVAIN: The condition clears up whether it is treated or not. From the character of the lesions and the history a sensitization to food does not seem probable. The feet may be involved for one month and not again for three or four months.

LICHEN PLANUS AND ANGIOKERATOMA. Presented by DR. L. J. FRANK.

A. C., aged 59, married, a presser, came to the Long Island College Dispensary with a condition which had started about eight months previously as papules with occasional bullae distributed over various areas of the body. Itching was moderate.

The patient presented a discrete, violaceous papular eruption over the arms and body, while on the legs pigmentation and a few umbilicated vesicles were seen. The scrotum showed areas of telangiectasia with hyperkeratosis. The duration of the latter condition was unknown. The blood was found to be normal.

DISCUSSION

DR. E. W. ABRAMOWITZ: I believe that the patient has lichen planus. I saw some lesions typical of lichen planus on the wrists. I object to the term angiokeratoma as applied to the vascular lesions of the scrotum. Such lesions are senile angiomas that may become capped by a keratotic scale. They are not related to the angiokeratoma of Mibelli; Wile has shown the distinct difference between the two.

DR. L. CHARGIN: I agree with Dr. Abramowitz that the condition is angiokeratoma not of the Mibelli variety. Careful examination of the wrist showed typical lichen planus lesions, so we must accept this diagnosis.

CHRONIC ATROPHIC LICHENOID DERMATITIS (CSILLAG). Presented by DR. A. WALZER.

R. S., a woman, aged 37, who was always well, complained of an eruption on the body of seven months' duration. Over the chest and back were many discrete, hard, pinhead-sized papules, arranged in groups, some of which were linear. In many instances they were surrounded with a pinkish-white border. There was no scaling. Within the patches, individual lesions could still be noted, and in others definite wrinkling was present. The tiny, individual primary lesions were lichenoid in shape. The mucous membranes did not show lesions.

DISCUSSION

DR. E. W. ABRAMOWITZ: I think that the condition is Csillag's disease. I hesitate to start a discussion as to whether it is morphea guttata, white spot disease, lichen albus or lichen atrophicus. The literature is already replete with the distinctions.

DR. L. CHARGIN: I should like to suggest that a biopsy be performed on the early lesions, as it may possibly throw some light on the relationship of this condition to lichen planus.

DR. R. WALZER: Lichen atrophicus and morphea guttata are the two diseases to be excluded. Since the patient shows no lichen planus papules, and since there is no evidence of morphea, such cases are now accepted as a distinct disease. Histologically, such cases show nothing characteristic of either lichen or scleroderma and there is therefore a tendency to group these diseases as separate entities, because they cannot be placed in either of the other two groups. Csillag's disease or chronic atrophic lichenoid dermatitis is in all probability a name which is most descriptive.

Feb. 16, 1931

A. WALZER, M.D., *Presiding*

LICHEN PLANUS ATROPHICUS. Presented by DR. A. PERSKY.

T. G., aged 17, was first seen at the Long Island College Clinic three days prior to presentation. She stated that she had always been well. A year and a half before presentation, she had noticed an irregular shaped lesion on the thigh. The eruption did not spread. Over the inner aspect of the right thigh there were numerous annular and serpiginous patches made up of flat, umbilicated, white papules which formed a raised border and in the center a soft telangiectatic scar. The Wassermann reaction was negative. There were no subjective symptoms.

DISCUSSION

DR. E. W. ABRAMOWITZ: I think that the condition is lichen planus atrophicus and sclerosis.

DR. A. WALZER: There is a tendency at present to divide all the lesions that show white atrophic spots into three groups: (1) the group that belongs in the scleroderma family; these are morphea guttata; (2) the group that begins as a typical lichen planus papule and ends in atrophy—lichen atrophicus; and finally, (3) a group Csillag described as beginning as a papule that simulates, but is not lichen planus, and that later undergoes atrophy.

This is the chronic lichenoid atrophic dermatitis. This patient does have lichen planus-like papules. These papules undergo changes and eventually end in atrophy. They should therefore be grouped with Csillag's disease.

DR. J. SKEER: I agree with the diagnosis of lichen planus atrophicus. I saw numerous pinpoint to pinhead-sized papules, and I could even see the depressions in some of them.

LUPUS VULGARIS. Presented by DR. L. J. FRANK.

M. D., aged 30, married, of Italian parentage, came to the Long Island Medical College Clinic on Jan. 22, 1931. The patient's past history was unimportant except for an enlarged cervical gland. An operation was performed for this condition, and the gland healed quickly, only to recur four years later. Examination revealed a sharply defined, infiltrated area made up of discrete and coalescing apple jelly nodules with scaling. A depressed scar was present in the center of the lesion. The Wassermann reaction was negative. The pathologic report showed a tuberculous structure.

DISCUSSION

DR. E. W. ABRAMOWITZ: The preferred method of treatment would be to inject a 1 per cent solution of gold and sodium thiosulphate intracutaneously at the site of the lesion. Traub and Monash, of the New York Skin and Cancer Hospital, have shown some good results with this method of treatment. If this fails, I should try, if it is feasible, the Gerson-Herrmannsdorfer diet.

DR. M. A. LYONS: In some of these cases the patients have been treated with filtered roentgen rays, pyrogallol or solid carbon dioxide, with beneficial results. Recently, infiltration with gold sodium thiosulphate has been used with good results.

DR. J. SKEER: It is said that one sometimes elicits a marked reaction from the injection of gold and sodium thiosulphate intradermally. On the other hand, I had a case of lichen scrofulosorum, in a 7 year old boy, who was unruly and would not permit intravenous therapy. I gave the injection intramuscularly. At that time (1928), this method was new. The patient received eight or ten injections with good results and without unfavorable reactions.

TULAREMIA. Presented by DR. G. F. PRICE.

A. B., aged 55, cleaned two rabbits on Dec. 29, 1930. One week later he complained of swelling and soreness at the tip of the left thumb. He presented himself for examination two weeks after exposure, with the left thumb markedly swollen and painful. There was an area of necrotic skin about the size of a ten cent piece overlying a small quantity of pus. He had been using wet dressings of mercuric chloride without improvement. The necrosis gradually involved the deeper layers of the skin. A sample of blood gave a positive reaction for tularemia in a 1:80 dilution. The Wassermann and Kahn tests gave negative reactions. A complete blood count also gave negative results.

DISCUSSION

DR. E. W. ABRAMOWITZ: The ulceration of the finger with the local glandular enlargement strikingly resembles a chancre. However, I made a diagnosis of tularemia at sight, having in mind a patient whom I had seen presented only a few weeks ago at the New York Academy of Medicine, by Dr. Hopkins. It must be remembered that this patient presents the ulceroglandular type.

According to Francis, those attending the patient are in no danger of infection by contact or by insects that have previously bitten the patient; however, I believe that such lesions should be handled with precautions. The treatment employed by Dr. Price, consisting of wet dressings and rest, seems to have a favorable effect.

In the recent issue of the *Weekly Bulletin* of the department of health of New York City (**20**:21 [Jan. 24] 1931), two authentic cases occurring in the past year are reported, but I am sure there have been more than that number probably not diagnosed as such. Dr. E. S. Godfrey, Jr., director of communicable diseases of the state of New York department of health, informs me that the state conservation department now requires that all rabbits imported from other states be quarantined for at least ten days before being released. This, together with the fact that importations of rabbits are made only during the winter (when the animals are not infested with ticks), should prevent the development of new cases of tularemia in this state.

DR. M. A. LYONS: Tularemia has been transmitted to the monkey.

A CASE FOR DIAGNOSIS (CUTANEOUS CALCINOSIS). Presented by DR. A. WALZER.

S. R., a woman, aged 29, married, with two children, and without a history of abortions or stillbirths had had two hazelnut-sized masses on the left elbow since childhood. About fifteen years prior to presentation they began to discharge, and the patient had them removed surgically. A scar remained. A short while later similar masses developed over the right mastoid region, which were also removed. The patient was told that these masses were cysts. At the time of the removal of the masses at the elbow, there appeared at the tip of the middle finger small white points. Since that time the white points had decreased in number. The patient complained of pain and itching at the tip of the middle finger. At presentation she showed numerous red and white pinhead-sized lesions uniting in one plaque over the tip of the middle finger of the left hand, which was somewhat swollen. The skin over the tip of the finger was tense and smooth.

DISCUSSION

DR. E. W. ABRAMOWITZ: The lesion on the finger is tense and red, with the history of an occasional creamy discharge. The same history is obtained for the lesion on the elbow before the lesion was removed. This points to the diagnosis of cutaneous calcinosis. A chemical examination of expressed material will probably reveal calcium phosphate or carbonate (Maloney and Bloom: Cutaneous Calcinosis, ARCH. DERMAT. & SYPH. **23**:244 [Feb.] 1931).

DR. J. SKEER: I think that some form of neoplasm should be taken into consideration.

PITYRIASIS RUBRA PILARIS. Presented by DR. A. WALZER.

S. C., a woman aged 26, married for two years, with an irrelevant past history, presented a condition which had begun about three and a half months previously with pruritus and an eruption on the upper part of the chest and elbows and which had been progressing and spreading ever since and involved practically the whole body.

There were present follicular, round papules, varying in color from that of the normal skin to red and surmounted with a central horny plug. They were single and in groups, and had a texture like that of a nutmeg grater. The individual lesions were especially prominent on the trunk and on the thighs where there were large patches, irregular in outline, erythematous, covered with fine adherent scales and apparently composed of individual papular lesions. At the border of these large patches the individual papular lesions were very distinct. The face was red and scaly and gave the impression of seborrhea. The scalp showed areas of seborrhea. The palms and soles were hyperkeratotic. The nails showed a raised, thickened, distal portion. There were no lesions of the mucous membrane.

DISCUSSION

DR. E. W. ABRAMOWITZ: This is a remarkable case of pityriasis rubra pilaris (Devergie). There are no lesions on the dorsa of the first phalanges, but this does not necessarily exclude the diagnosis. It will be interesting to see the results of parathyroid therapy in this case.

DR. A. WALZER: The history of the original controversy over this disease is interesting. The original description of this disease was probably due to Hebra. He described a disease which he labeled lichen rubra, and the majority of his patients died. Later Kaposi divided lichen rubra Hebra into two groups. He called the cases in which the patients did not die and which were of a benign type, lichen ruber acuminatus and the severe fatal types, lichen rubra Hebra. Meanwhile the French writers were discussing a disease, pityriasis rubra pilaris Devergie, which the German school did not accept as similar to lichen ruber or lichen ruber acuminatus. At the Dermatological Congress in 1892 in Vienna, the French showed the patients with pityriasis rubra pilaris Devergie and the Germans showed patients with lichen ruber acuminatus. It was then finally agreed that they were identical diseases.

SMALL PAPULAR SYPHILODERM. Presented by DR. WILLIAM BEST.

M. T., a colored woman, aged 21, was admitted to the Kings County Hospital complaining of a generalized eruption over the body and a sore throat. She presented a miliary, papular, follicular, spinous eruption over the body, with mucous patches in the throat and on the labia. The Wassermann reaction was 4 plus. The eruption resembled lichen pilaris seu spinulosus.

DISCUSSION

DR. E. W. ABRAMOWITZ: I agree with the diagnosis. This is a relapsing secondary syphilis, of the follicular type. The spinous lesions are those seen with the other dermatoses, like lichen planus, lichen scrofulosorum and seborrheic dermatitis.

DR. M. A. LYONS: This case is interesting because of the grouped follicular and spinous lesions on the back, and it makes me believe that this condition is a delayed secondary syphilid. Similar lesions that are not so extensive have been noted in recurring secondary eruptions.

CHONDRODERMATITIS NODULARIS CHRONICA HELICIS? Presented by DR. A. WALZER.

B. L., a woman, aged 24, complained of a small "sore" on the right auricle, which had been growing ever since it appeared nine months before presentation. She had received various local applications, ultraviolet irradiation and local cauterization, the last about three months previously, without effect.

There was present on the left auricle, the most prominent part of the anthelix, a pea-sized, punched-out, indurated, sharply outlined ulceration. It was very tender. Several of the cervical and submaxillary glands on the same side were palpable and painful.

DISCUSSION

DR. E. W. ABRAMOWITZ: I do not think that the condition is Winkler's disease (chondrodermatitis nodularis chronica helicis). There is no involvement of the helix but only of the antehelix. The lesion is not a nodule but an ulceration. I would consider a traumatic ulceration from the wearing of a tight hat. In spite of the youth of the patient, epithelioma should be ruled out.

DR. J. SKEER: I do not think that the condition is malignant, but I should suggest a diagnosis of tuberculosis.

DR. A. WALZER. Many such cases were originally accepted as epithelioma, until histologic examination proved them to be otherwise. This lesion simulates the

condition described as chondrodermatitis nodularis chronica helicis, but it is not on the helix. On account of the age of the lesion, one would expect a more advanced process. In the type of case that Dr. Abramowitz mentioned the condition is due to pressure and occurs on the anthelix, but ulceration never occurs. These lesions are nodular growths which clear up after pressure is removed.

NEW YORK DERMATOLOGICAL SOCIETY

J. F. Fraser, M.D., *Secretary*

Regular Meetings, Jan. 27 and Feb. 24, 1931

Jerome Kingsbury, M.D., *President*

A Case for Diagnosis (Macular Eruption). Presented by Dr. R. H. Rulison.

B. C. H., a physician, aged 49, was presented for diagnosis and suggestions as to treatment for a macular eruption on the legs, thighs and lower part of the trunk. The eruption was first noticed in October, 1930, at a time when the patient was under a considerable mental strain because of illness in the family. He had had neuritis of the shoulder, which began in 1918, and was annoying during cold weather for several years. In 1921, a transitory levulosuria was detected during periods of overwork. Following a less active mode of life, this condition disappeared. About two years prior to presentation the patient had had several attacks of acute gastro-intestinal distress, with prostration. This condition was considered to be due to diverticuli of the colon and was relieved by a suitable diet. He had also had varicose veins of the legs for several years.

The eruption began with some itching and the appearance of hemorrhagic puncta and macules varying in size from that of a dime to that of a half-dollar. The spread of the lesions had been upward. The spots presented a stippled appearance.

DISCUSSION

Dr. F. C. Combes: I have never seen a case like this. When I examined the patient, I was reminded of a paper by Parkes Weber (*Brit. J. Dermat.* **42**:374 [Aug.-Sept.] 1930) in which he described a similar condition as telangiectasis macularis eruptiva perstans. His case was quite extensive, but reference to it may be of some assistance in arriving at a diagnosis in the case presented.

A Case for Diagnosis (Leprosy? Tuberculosis?). Presented by Dr. F. C. Combes.

M. E., a Negress, aged 24, born in South Carolina, came to New York in 1925, where she lived continuously until the onset of the cutaneous lesions. Her family history was of no significance. The condition presented dated back about ten years, when she complained of pain, which developed suddenly in the right ankle and which spread gradually to the toes of both feet and later to her hands. In 1926, a nodule developed on her right cheek, and deformity began to occur in her fingers and toes, which were painful and exquisitely tender.

In December, 1927, she was presented before the New York Academy of Medicine (Arch. Dermat. & Syph. **17**:747 [May] 1928) with a condition diagnosed as leprosy, which diagnosis was generally accepted clinically and histologically. She received injections of chaulmoogra oil with definite improvement. Three years later she was under the observation of Dr. Denney at Carville, La., for three months. Two months after her discharge she was seen again by Dr. Combes, at which time the disease was much more advanced than in 1927. Nodules had

reappeared on her upper arms, eyelids, forehead, nose and cheeks. They varied in size up to that of a pea, were grouped in some areas and smooth and showed no abnormality in sensation. There was also a small group of lesions at each oral commissure. The lobes of her ears were erythematous and nodular. Her eyebrows were normal. There were a few blood crusts on the nasal septum. The terminal phalanges of the fingers were atrophied. At the tips of the fingers were what appeared to be minute epidermic vesicles, but there was no moisture. Both her hands and feet were cold to the touch. The skin on the back of the hands was normal.

Histologically, the lesions strongly suggested leprosy; however, in some areas the structure resembled tuberculosis.

Roentgen examination of the hands disclosed chronic osteitis of the terminal phalanges with multiple cyst formation. Roentgen examination of the chest gave negative results, except for a slight fibrosis.

Neurologic examination showed but little of interest, excepting diminished sensation in the lower lobe of the right ear. The motor muscles of the face showed the left angle of the mouth to be pulled more to this side than to the right. The hearing was slightly diminished on the left side.

Chemical analysis of the blood gave normal results. The Wassermann reaction of the blood was positive, and smears from the nose and tissue were consistently negative for leprosy. Guinea-pig inoculations gave negative results. Examinations of sputum also gave negative results.

DISCUSSION

DR. E. A. MALONEY: I believe that this is a case of tuberculosis. I do not remember having seen the case before, but the character of the nodules suggests to me the disseminate facial type of tuberculosis. The fact that a guinea-pig test has been negative does not militate against that diagnosis, and the fact that the histologic report is leprosy would suggest that tuberculosis has been mistaken for that condition.

DR. R. H. RULISON: I agree practically with what Dr. Maloney has said. The patient should be tested with tuberculin.

DR. HOWARD FOX: I agree with Dr. Maloney's remarks. The appearance of the eruption has changed considerably since I first saw her at the clinic two years ago. At that time there were only a few nodules on the face. As the histologic examination was reported as leprosy, I was satisfied with that diagnosis. The new lesions now are like those of disseminated miliary lupus of the face.

DR. E. F. TRAUB: I agree with Dr. Maloney's diagnosis, despite the negative evidence for tuberculosis in the section. The lesions on the ear and the finger tips, as well as the papules and the small nodular lesions on the face, give the appearance of a tuberculosis cutis rather than of any other condition.

DR. H. H. WHITEHOUSE: Nothing has been said about the osteitis. It was described in one examination as a cystic type of necrosis of the bone. The condition of the finger, combined with that of the lesion around the mouth, looks like miliary tuberculosis. The pains at the beginning evidently preceded the necrosis of the bone. I favor the diagnosis of tuberculosis. As Dr. Maloney said, the biopsies are very similar, and one often cannot find the bacilli in many of them. The color and the race both favor tuberculosis.

DR. BINFORD THRONE: I agree with Dr. Whitehouse and Dr. Maloney.

DR. J. J. ELLER: I agree with the diagnosis of tuberculosis in this case.

DR. F. C. COMBES: I appreciate the discussion and will have Dr. Rulison do an avian tuberculin test on the patient, which I will report later. I think that clinically we can rule out lymphangioma tuberosum multiplex (Kaposi), which was suggested histologically by Dr. Denney in a letter to me. The specimen we took for biopsy from practically the same location did not look even remotely like it.

A Case for Diagnosis (Maculae Atrophicae? Lichen Planus Sclerosus et Atrophicus?). Presented by Dr. R. H. Rulison.

K. F., a married woman, aged 31, of Russian parentage, was admitted to the skin clinic on Jan. 26, 1931. The duration of the condition presented was four months. There had been a gradual onset, with itchy, rough spots on the sides and front of the neck. These spots had increased slowly, so that most of the anterior and lateral aspects of the neck and the upper part of the chest were involved. The patient had received no treatment except the occasional application of a 3 per cent ammoniated mercury ointment.

On admission, the eruption consisted of many dry, white, atrophic, lentil-sized areas.

DISCUSSION

Dr. C. M. Williams: This is an interesting case. The clinical diagnosis of cutaneous atrophy is good, but the curious feature is that it occurs on the parts exposed to sunlight. I have seen almost as marked conditions produced by the sun's rays. I am not sure that the condition is not due to exposure to the actinic rays of the sun.

Dr. F. C. Combes: I think that this is a case of atrophoderma striatum et maculatum.

Dr. Howard Fox: The lesions looked like ordinary striae atrophicae in my opinion, although I have no idea of their causation. They appear at times in persons who have lost weight, though that does not obtain in this case.

Dr. H. H. Whitehouse: I think that the condition is atrophy of some kind.

Dr. H. H. Rulison: The patient was seen only yesterday at the clinic, and we have no definite diagnosis to offer. I cannot quite accept the diagnosis of linear atrophy following exposure to sunlight. I cannot reconcile myself to that diagnosis because the eruption is on the neck. It began on the neck and has only slowly extended to the upper part of the chest. If it were caused by exposure to the sun's rays, it would seem that there would be more on the chest than on the neck. Of course, the patient has a macular atrophy, but I have no explanation to offer.

Argyria and Dermatitis. Presented for Dr. J. Frank Fraser.

S. O. H., an unmarried woman, aged 38, presented a generalized argyria and dermatitis of the hands. The argyria had developed in 1920, following the ingestion of silver nitrate that was prescribed by her physician for indigestion. The onset of the dermatitis was in June, 1930. She consulted a dermatologist, who diagnosed the condition as pompholyx. Roentgen therapy produced temporary benefit.

The case was presented for diagnosis and suggestions regarding therapy.

DISCUSSION

Dr. E. R. Maloney: The argyria every one will admit. The patient states that she has had a great deal of gastric disturbance and that she was operated on some time last year. Since June, 1930, she has had many attacks of gastric disturbance; she could not eat, had nausea and vomited. It might be possible to consider this a case of dermatitis due to a dietary deficiency somewhat analogous to pellagra. There is no history of the application of any irritating substance to the hands, and the eruption is limited to the upper part of the hands.

Dr. Howard Fox: This case might possibly be considered to belong to the group of cases recently described by Maloney and Tulipan as pseudopellagra. It certainly lacks the sharp border and classic appearance of ordinary pellagra.

A Case for Diagnosis (Fibroma?). Presented by Dr. Eugene F. Traub.

A woman, aged 40, a native of Poland, entered the clinic of the New York Skin and Cancer Hospital complaining of an eruption that had been present for four years. She was married and had three children living and well; she had had

one miscarriage. For the past seven years her menses had been irregular, and for the past three years she had had some headache, dizziness and hot flashes. Otherwise, the past personal and family histories were unimportant.

The eruption consisted of papules and nodules distributed over the extremities. There were about twelve or fourteen lesions in all. The first lesion noticed by the patient appeared on the outer aspect of the left arm about four years prior to presentation, beginning with what she described as a pimple; this gradually enlarged, forming a distinctly cutaneous nodule, reddish and noninflammatory with central involution and with no subjective symptoms. The other lesions had made their appearance at irregular intervals following the first one.

The patient had received about fifteen electric treatments and many roentgen treatments for the lesions since July, in Halifax. There was no change in the lesions. A pathologic report from the Victoria General Hospital stated that there were no signs of a malignant process.

Chemical analysis of the blood, urinalysis and a Wassermann test gave normal results. Guinea-pig inoculation had been done, but the report had not been received. The diagnosis obtained at biopsy was fibroma.

DISCUSSION

DR. G. M. MACKEE: Clinically, the tumors resemble fibroma, and the microscopic diagnosis is fibroma.

DR. P. E. BECHET and DR. HOWARD FOX agreed with the diagnosis of fibroma.

DR. J. E. LANE: This is a case of fibroma simplex (Unna), or noduli cutanii (Arning and Lewandowsky), described as dermatofibroma lenticulare by Schreus in a recent number of the *Archiv für Dermatologie und Syphilis.*

DR. E. F. TRAUB: The reason this case was presented for diagnosis, despite the report from the section taken from the patient, is because we found in going into the history that the lesions had been previously treated by both the roentgen rays and some form of electrolysis or electrodesiccation. For this reason I thought that possibly the structure might have been so changed that only a microscopic diagnosis of fibroma was possible, whereas actually the original lesion might well have been a sarcoid. Another point that I have noted in previous cases clinically diagnosed as sarcoid is that the picture in the histologic section shows the structure of fibroma, this being particularly true if the section is taken from some part of the body that is subjected to pressure. I shall have a section taken from the patient's leg, where she states no treatment has been applied in the past.

A CASE FOR DIAGNOSIS (LYMPHANGITIS?). Presented by DR. R. H. RULISON.

N. S., aged 39, a patient from the service of Dr. Schwartz, Cornell Clinic, gave a history of an attack of erysipelas on the left side of the face in 1925. Since then he had had a very red face and recurrent attacks of edema, with superficial vesicles that broke and formed crusts. At times pustules developed which were rather indolent but eventually healed.

A preliminary diagnosis of rosacea and impetigo was made. On June 23, 1930, the patient presented what appeared to be angioneurotic edema of the face, with a papular urticaria. On August 25, he still had occasional pustules. On September 5, an autogenous vaccine made from the pustules on the face was administered. He had received sixteen doses of this vaccine, and the pustulation had decreased. The attacks of edema continued. The patient thought they were less frequent when he limited his intake of starch to a minimum. He had a spastic colon and a hyperchlorhydria. Protein skin tests gave positive results with tomatoes, lima beans, grapefruit, peaches and beef. All of these articles had been eliminated from the diet since June, 1930, without improvement.

DISCUSSION

DR. H. J. SCHWARTZ: It seems to me that this cutaneous condition may well originate from an infection in the nasal passages.

DR. J. E. LANE: I think that the patient has rosacea. There is something in addition to the swelling about the eyes and face, probably due to lymphostasis.

DR. H. H. WHITEHOUSE: I think that this is a type of case that we used to see called pseudo-erysipelas; but it is a cellulitis with an active focus somewhere in the nose. I have never seen a laryngologist who could find a focus of infection, however. It is a cellulitis secondary to blocking of the lymphatics. The patient says that it began with stoppage of the nose.

DR. BINFORD THRONE: I agree with Dr. Whitehouse.

DR. G. M. MACKEE: I think that the patient has rosacea, because of the flush in the center of the face and the acneform lesions; but, in addition, he has a recurrent lymphangitis, probably from a streptococcal infection in the nose.

DR. R. H. RULISON: The patient is convinced that the condition is somehow connected with the erysipelas he had. He was seen at Bellevue Hospital by Dr. Symmers, who said that he had no knowledge that would bear on this case and that he had not known of any like it in 2,000 cases of erysipelas.

The patient has a diffuse generalized erythema covering the whole face and the anterior part of the scalp, with recurrent angioneurotic edema. It was because of that I was not satisfied with the diagnosis of rosacea. I will accept the diagnosis of pseudo-erysipelas.

A CASE FOR DIAGNOSIS (LUPUS ERYTHEMATOSUS OR TELANGIECTASIA?). Presented by DR. J. J. ELLER.

The patient was an American, aged 27, unmarried, from the New York Post-Graduate Clinic. Examination revealed a circular red area, 4 cm. in diameter, made up of numerous fine, superficial, telangiectatic blood vessels. The duration of the condition was nine years. The diagnosis rested between plain telangiectasia and lupus erythematosus of the nonscaling telangiectatic variety.

DISCUSSION

DR. G. M. MACKEE: I do not think that it is a case of lupus erythematosus. The noncommittal clinical diagnosis is telangiectasia. I do not know the etiology; the condition might be due to light. In addition to the diffuse telangiectasia of the face, there are several vascular nevi, which indicates a predisposition toward a cutaneous vascular disturbance. In such a person, light, gastro-intestinal disorders might lead to telangiectasia.

DR. P. E. BECHET: Dr. MacKee voiced my opinion of the case.

DR. R. H. RULISON: I do not think that there is any lupus erythematosus in this case.

DR. E. F. TRAUB: This is a type of telangiectasia that occurs not infrequently in certain types of persons, and this patient seems to be a typical example of that group. The patients are usually fair-haired with a certain amount of seborrhea of the scalp, generally some thinning of the hair with an increased amount of sebaceous secretion, and also some enlarged and cystic sebaceous glands. All of these findings were to be seen in a rather marked degree in this patient. I see no reason why the telangiectasia that he presents should be associated with lupus erythematosus, but it might be taken for a very mild form of a condition that has been called seborrhea congestiva.

DR. J. J. ELLER: I think that Dr. Traub's comment is to the point. It is the type of telangiectasia that occurs in a seborrheic individual.

PITYRIASIS LICHENOIDES ET VARIOLIFORMIS. Presented by DR. EUGENE F. TRAUB.

Mr. H. A., aged 36, a draftsman, born in Sweden, first presented himself at the New York Skin and Cancer Hospital on Jan. 24, 1931. He stated that about two months previously an eruption began, which he first noticed on the right great

toe. It became generalized very promptly, and crops of lesions developed over the trunk and extremities. On first inspection, many of the lesions resembled a papular pityriasis rosea. On close inspection, however, none of the characteristically diagnostic features of that disease were seen, and the patient definitely stated that the older lesions disappeared in the course of a week or ten days, while new ones constantly appeared. The lesions apparently began as erythematous macules that promptly became papular, some developing a central purpuric or hemorrhagic area, and later showing a slight scaling and a slight crinkling of the skin which closely simulated an atrophy but which apparently was not scar tissue. The Wassermann reaction was negative.

Biopsy Report: "Section shows a thin epidermis covered by a rather thick scale that is parakeratotic in spots. There is marked edema of the upper corium, associated with very slight dilatation of the blood vessels and occasional clumps of round cells in the papillary bodies. Where these clumps are thickest they cause a marked thinning of the super-papillary plates. The rete pegs are irregular in length as well as in shape. There is a suggestion of slight to moderate edema in the epidermis, especially where there are some round cells. Diagnosis: Possible pityriasis lichenoides chronica."

DISCUSSION

DR. E. R. MALONEY: The eruption in this case does not agree, in my opinion, with that of the cases recently shown as parapsoriasis varioliformis, as it lacks the polymorphous character of those cases. A short time ago we presented at the Academy a dermatitis following the injection of tuberculin, which was diagnosed as parapsoriasis varioliformis by many of the members. The eruption cleared up in a few days and was again produced by another injection of tuberculin. I believe that in these cases we do not have a new disease entity with more or less varioliform lesions, but simply eruptions with polymorphic lesions due to various toxins. In this particular case I believe that the correct diagnosis is the guttate type of parapsoriasis.

DR. E. F. TRAUB: The chief reason for presenting the patient at this time was to bring up the point as to whether this condition fits in with an apparently new entity that has been described under the diagnosis submitted. The patient, of course, has been observed for only a very short time, and I have not seen any varioliform lesions. That, however would not rule out this diagnosis, because the lesions may have been varioliform at their inception. There is no question that the case belongs in the group of parapsoriasis, and I believe that it fits in with the new entity of acute cases of comparatively short duration, the lesions coming and going in crops.

DR. G. M. MACKEE: I am not convinced that the case is one of parapsoriasis varioliformis. I would call it parapsoriasis lichenoides. It is a purely papular disease. Clinically and histologically, it looks like what we have always called lichenoid parapsoriasis. Parapsoriasis varioliformis is more polymorphous, and the lesions are constantly changing.

DR. P. E. BECHET: In this particular instance I much prefer the term guttate parapsoriasis. The varioliform lesions are marked by their absence.

DR. R. H. RULISON: It was my understanding that one of the characteristics of this new disease is the transient character of the eruption. The patient has the condition for a few weeks, and then the lesions clear up. This patient has had this condition continuously. I would be inclined to agree with the diagnosis of guttate parapsoriasis.

DR. HOWARD FOX: I think that this is a case of ordinary parapsoriasis guttata, and that the burden of proof is on those who do not consider it as such. Psoriasis has been excluded, I believe, by histologic examination. In the informal discussion, some one mentioned pityriasis rosea as a possibility. Aside from the duration, I think that the previous treatment for two weeks with Whitfield's ointment would exclude that diagnosis, as little or no improvement resulted. Pityriasis rosea, in

my experience, will disappear in large measure in from ten days to two weeks by daily inunctions with 3 per cent salicylic acid, following a warm bath.

DR. H. H. WHITEHOUSE: I agree with the diagnosis of parapsoriasis. I would rule out pityriasis rosea.

DR. E. F. TRAUB: As already stated, there seems to be no doubt about the diagnosis of parapsoriasis. In the cases reported in the January, 1931, issue of the ARCHIVES by Senear and Oliver, and also by Gross, the varioliform lesions were often present for only a short period in some of the cases, so that if the case did not happen to be seen either in its inception or in the phase during which these lesions were present, they could not be depended on as a diagnostic aid. The purpuric or hemorrhagic element seen in some of these lesions was also commented on. The lesions this patient presents fit in exactly with those of a patient whom I presented before this Society about March or April, 1930, at which time there was no hesitancy in making the diagnosis of parapsoriasis varioliformis.

DR. J. E. LANE: Did the lesions in those cases clear up entirely?

DR. E. F. TRAUB: In most instances the course was acute, running anywhere from a number of weeks to a number of months, the eruptions finally clearing up entirely.

DR. G. M. MACKEE: Why do you think that these lesions will clear up? Just because of the patient's statement?

DR. E. F. TRAUB: The case I mentioned as having presented before, which was similar to the cases presented at the Academy, fits in exactly with this picture, and as the lesions in this patient are not fixed but vary constantly, some disappearing whereas others are just coming out, I believe that it will follow the usual course of the acute cases. Of course, this can only be finally determined by watching the patient over a period of time.

A CASE FOR DIAGNOSIS (SYPHILIS). Presented by DR. PAUL E. BECHET.

L. G., a white man, aged 50, stated that the lesion shown had been present for sixteen years. He had appeared at the clinic for the first time on the day of presentation. The lesion was situated on the left palm. It was raised and hyperkeratotic, with an irregular, rather sharply defined, "oyster shell" border. The patient said that he had not had a syphilitic infection and ascribed the lesion to pressure from an instrument that he held in the left palm while setting up lead glass windows. A specimen of blood had been taken for a Wassermann test. The points in favor of syphilis were the unilateral distribution and the rather sharply outlined border.

DISCUSSION

DR. J. E. LANE: I think that this is a case of palmar syphilis. The lesions on the palate are part of a "smoker's mouth."

DR. H. H. WHITEHOUSE: The outline is that of a circinate lesion. The patient has no evidence on the other hand. I have seen that type of unilateral syphilis with just such a picture. Clinically, it seems to be that condition.

DR. E. A. MALONEY: I agree that it is a case of syphilis.

DR. P. E. BECHET: I agree with the diagnosis of syphilis.

DR. HOWARD FOX: The fact that the eruption has remained strictly localized on one palm for a number of years is almost conclusive evidence of its syphilitic nature. Eczema, psoriasis or dermatomycosis would almost surely have produced bilateral lesions.

A CASE FOR DIAGNOSIS (KERATOSES?). Presented by DR. PAUL E. BECHET.

A. M., a white man, aged 48, a seaman, stated that for two years he had had peculiar, small, hyperkeratotic, reddish-yellow lesions on the dorsa of the feet, which, when gently scraped off, left bleeding points. The site of former lesions

showed superficial varioliform atrophic scars. On the body there were brownish patches. The patient was in good health, and there were no subjective symptoms.

DISCUSSION

DR. F. C. COMBES: I have nothing to suggest for a diagnosis except perifollicular keratosis.

DR. G. M. MACKEE: The best diagnosis I can make is simply keratosis. I think that we can rule out arsenic as a cause. The patient should be investigated for some irritating material that has come in contact with the parts over a long period. Even a sailor might come in contact with tar or lamp black.

DR. J. E. LANE: I cannot make a diagnosis; the only point that occurs to me is the similarity of these lesions to those described by Schweitzer as keratoderma punctatum. I doubt whether this is the same condition for, so far as I know, in the cases he collected none of the lesions was seen anywhere except on the soles.

DR. H. H. WHITEHOUSE: I agree with Dr. MacKee.

ARSENICAL PIGMENTATION. Presented by DR. BINFORD THRONE.

A. C., a man, aged 54, of German descent, gave a previous and a family history of no importance. Physical examination gave negative results. The cutaneous condition had begun eight months previously on the back and scalp and, according to the patient, had become universal in three weeks. Examination showed a marked dark brown or black pigmentation involving the whole surface of the body. Urinalysis after the administration of sodium thiosulphate showed 1.11 mg. of arsenic per hundred grams of dried substance. There had been some clearing up of the discoloration under treatment, which consisted in intravenous injections of a freshly prepared solution of 1 Gm. of sodium thiosulphate three times a week.

DISCUSSION

DR. G. M. MACKEE: This is a typical case clinically. I was especially interested in it, for it is the first universal case I have seen. In the second place, I have never encountered a case of arsenical pigmentation of this type without a history of antecedent injection or ingestion of arsenic.

DR. R. H. RULISON: I agree with the diagnosis, but I should like to know if it is possible to exclude Addison's disease completely from the picture.

DR. HOWARD FOX: My idea of Addison's disease is that the pigmentation is diffuse, whereas arsenical pigmentation is distinctly reticulated. In view of the long duration of the eruption, one might expect some evidence of keratosis on the palms or the soles. The diagnosis, however, appears to be plain.

DR. J. E. LANE: As to Addison's disease, if the patient had had the condition for that length of time he would be so emaciated that he would not be able to walk. Dr. Throne says that there is no pigmentation in the mouth; in Addison's disease or in pernicious anemia, pigmentation would probably be present there long before it appeared on the body.

DR. H. H. WHITEHOUSE: I admit that this is a case of arsenical pigmentation, but it is difficult to account for it from the small amount the patient has had over this length of time.

DR. BINFORD THRONE: I have nothing to add except that the amount of arsenic found in this patient's urine—1.11 mg. in 100 Gm. of dried substance—is very large and is about thirty-seven times the amount that might be considered normal. He works where crude oil is refined. These oils contain arsenic and may be the source of the arsenical intoxication.

A CASE FOR DIAGNOSIS (PSORIASIS?) Presented by DR. PAUL E. BECHET.

S. S., a boy, aged 5, had had a sharply defined, ringed, nonscaly patch with a clearing center on his left knee for six months. Within the week of its appearance,

a generalized eruption developed on his trunk. This eruption consisted of hyperkeratotic follicular plugs, aggregated into small patches, which on palpation had a grater-like feel. There was a dry scaly patch on the right leg. Repeated scrapings for tinea were negative. Tests for Trichophyton also gave negative results. A specimen had been taken for biopsy, but proved of no assistance in the diagnosis.

DISCUSSION

DR. HOWARD FOX: The patch on the leg appears to me to be psoriasis, while the lesions on the trunk might be dermatitis venenata.

DR. E. F. TRAUB: I also thought of psoriasis, the lesion on the patient's knee being strongly suggestive. On the other hand, the peculiar, slightly keratotic or follicular, grouped lesions on the body are difficult to account for. These lesions are only slightly elevated, and the majority are on the anterior surface of the trunk where one is less likely to encounter ordinary keratosis pilaris.

DR. H. H. WHITEHOUSE: I think that the condition is psoriasis, but whether the lesions on the body have any relation to it, I doubt. This lesion is lichen pilaris—a follicular lesion—which might be due to therapy. The lesions on the body are of several months' duration, which would rule out ringworm. I should watch the case and expect to see the lesions of psoriasis from time to time.

DR. BINFORD THRONE: I cannot see any signs of mycotic infection. The lesion on the leg looks psoriatic to me. The negative result from the intradermal test with trichophytin is sufficient to rule out mycotic infection. This has been universally positive in my experience in cases showing such infection.

DR. E. R. MALONEY: I agree with the diagnosis of psoriasis, and I think that the eruption on the chest might be due to the application of some ointment.

DR. F. C. COMBES: I agree that the lesions on the body seem to be too well defined to be dermatitis venenata. I think that they may be classified as lichen pilaris circumscriptus. The lesions on the leg are psoriasis.

DR. C. M. WILLIAMS: The lesions on the legs are those of psoriasis; those on the body are of uncertain nature. They may be dermatitis venenata. There are no lesions to support a diagnosis of tinea, and examination of the scales revealed no mycelia. Quite aside from the fact that lichenoid tricophytid persists only a few days or weeks, whereas the lesions on the trunks in this case have been present for six months, a diagnosis of tricophytid is absolutely unwarranted in any case until a diagnosis of tinea has been established beyond question. This is a new subject. We know very little about the pathogenesis, the clinical appearance, or the course of tricophytid, which is protean in its manifestations and which may simulate many other eruptions. I cannot protest too strongly against the tendency to class an unknown eruption as tricophytid because the patient has some horny débris between the toes, or has a round patch somewhere that remotely resembles ringworm.

DR. P. E. BECHET: I agree with Dr. Williams. The case was not presented as a case of tinea with possible tricophytid, but as a case for diagnosis, with that possibility in mind. I had considered psoriasis, but the lesions on the body were so unlike that dermatosis as to almost negative that diagnosis; they were arranged in patches consisting of grouped hyperkeratotic plugs, very much like pityriasis rubra pilaris. The primary lesion on the left knee was ringed, with no scaling. It had a clearing center. A single lesion on the right leg was distinctly scaly, dry and typical of psoriasis. No fungi had been demonstrated, despite repeated attempts to find them. Psoriasis is probably the correct diagnosis, but there are a number of definite points against such an opinion.

ROENTGEN SEQUELAE. Presented by DR. FRANK C. COMBES.

J. K., a white man, aged 85, a physician, born in the United States, presented roentgen sequelae on both hands. The changes had been present for about twenty years. The skin of the hands was atrophic and showed numerous areas of

telangiectasis and keratoses. About fifteen years prior to presentation, an indolent ulcer had developed on the left hand, which was excised and skin grafted. A similar operation had been performed about nine years later on the same hand. The patient complained of considerable pain in the fingers of this hand and in the region of a keratotic patch. He was presented for suggestions as to further treatment.

DISCUSSION

DR. GEORGE M. MACKEE: In cases of this kind the immediate result of radium therapy is often excellent. The lesions not infrequently disappear completely, and the pain ceases; however, while the good result may be permanent, it is usually temporary, the clinical cure lasting from a few months to several or even many years. Occasionally radium fails entirely. As a rule, I think that radium therapy is not a satisfactory treatment for keratoses and ulcers that represent roentgen sequelae, especially in young persons. In most such cases it is preferable to destroy the lesions with electrodesiccation or to do a plastic surgical operation, depending on the requirements of the individual case. In this instance, however, the patient, because of his age, has a short expectation of life. Cancer is not now present, and in all probability it will not develop during the remainder of his life which, of course, is likely to be short. If epithelioma should develop, it will be of prickle cell type, but because of the sclerotic tissue it will develop slowly, so that there will be ample time to establish a diagnosis and to destroy or remove the lesion before metastasis occurs. Therefore, if it were not for the pain of which the patient complains, all that would be necessary would be expectant therapy and periodic inspection. I think that in this particular case the beta rays of radium should be given a fair trial.

DR. J. FRANK FRASER: As the growth is painful, it would be better to proceed with the treatment outlined by Dr. MacKee.

DR. PAUL E. BECHET: I am in thorough agreement with Dr. MacKee. Here is a man of 85, with as yet no epithelioma on his hand. In view of this fact, it would seem that one could temporize with some bland ointment, such as boric acid, rather than radically attack the lesion. I clearly remember an old man who came under my observation at the Presbyterian Hospital about fifteen years ago. He had multiple epitheliomas all over his face and many patches of seborrheic keratosis. He was very feeble, and boric acid ointment was used for several months. He was most assiduous in its application, and greatly to my surprise the improvement was really remarkable.

DR. H. H. WHITEHOUSE: I agree with Dr. Bechet and Dr. MacKee, that as long as the lesions are only fairly painful, it would be well merely to watch the case. The only question is how to treat the painful lesions, and I should think that for them radium would be the method of choice, letting the others take care of themselves.

DR. J. J. ELLER: The main point to bring out is that roentgen keratoses should be treated by some form of high frequency rather than by irradiation, except in special cases of very old age, etc.

DR. F. C. COMBES: My opinion is along the same lines as suggested.

TERTIARY SYPHILIS. Presented by DR. EUGENE F. TRAUB.

W. B., a man, aged 53, a builder, born in the United States, had had lesions on the arms and legs for twenty years, which healed leaving atrophic scars. He also presented on the back extensive, serpiginous, nodular lesions with areas of scarring, of twelve years' duration. The history was negative for a primary lesion. The Kahn and Wassermann reactions were 4+.

DISCUSSION

DR. F. C. COMBES: This is an unusual case, demonstrating several points of particular interest. The first point is the long duration of the lesion; another is

the intense vascularity of the lesion. I have never seen a syphilid that was so angiomatous. I should like to examine a histologic section from this case in order to see the condition of the blood vessels. Still another point of interest is whether this man would not get along as well without any treatment other than mercury and iodide. I would like to know what type of treatment has been suggested.

DR. H. H. WHITEHOUSE: The patient says that the lesion is growing larger and spreading. I should think that he should receive treatment with iodide and mercury instead of arsphenamine at this late stage of the disease. What the raison d'etre of the angiomatous condition is, I cannot say.

DR. J. J. ELLER: I think that the point of giving conservative therapy is a good one. The patient must have developed a good immunity by this time, which may be lessened by very intensive treatment.

DR. E. R. MALONEY: This is an interesting case and a type that we do not see often. The patient has gone a long time without treatment, and I should think that he should have mercury and iodide, with a good deal of the latter.

DR. GEORGE M. MACKEE: The chief point of interest is the long duration. Many years ago we used to encounter serpiginous syphilids with a duration of a number of years, but I cannot recall any that lasted as long as this. As for treatment, I agree that "mixed treatment" or any of the older methods would clear up the eruption. However, I think that the patient should be examined for neurosyphilis and visceral syphilis. In the presence of negative findings and in spite of the fact that the patient may have a relatively high degree of immunity, he is still young enough to develop damaging visceral lesions later in life. While there is no certainty that adequate modern treatment will prevent serious late manifestations in this case, and admitting that such manifestations might never develop even if the condition were entirely neglected, I do believe that he should receive the probable or possible benefit of modern therapy. However, the chief point here is periodic inspection for the remainder of the patient's life, or until he is 70 years of age.

DR. E. F. TRAUB: The patient has been under our observation for a little over a week, during which time he has been taking "mixed treatment" by mouth, and I believe that the condition has improved by this method about as rapidly as could be expected by any method at our disposal at the present time. It would be my idea to continue this form of treatment in conjunction, possibly, with some intramuscular injections of bismuth. I shall submit the suggestions made to our syphilis clinic, where I shall refer the patient for further treatment.

SARCOMA (KAPOSI). Presented by DR. EUGENE F. TRAUB.

V. F., an Italian, aged 68, presented a lesion on the ankle, which had first appeared five months previously as a slightly raised, irregular, bluish-black patch. There was no itching or pain, although there was occasional smarting at night. Other lesions soon appeared on the leg, knee, buttocks, thigh and right index finger. Later the lesions became rounded and soft. The one on the index finger became superficially ulcerated, so that it had the appearance of a pyogenic granuloma. The family history was irrelevant. The patient's general health was good.

DISCUSSION

DR. H. H. WHITEHOUSE: I recall Dr. Sherwell's experience in giving heavy doses of arsenic in these cases; many of the eruptions cleared up under such treatment. Roentgen rays might be used in conjunction with arsenic.

DR. PAUL E. BECHET: I should like to second Dr. Whitehouse's remarks. In the few cases that have come under my care, I was most favorably impressed with the results attained from active arsenical medication. Roentgen rays are exceedingly useful in this dermatosis, and it would seem to me that a combination of the two would be to the best interests of this patient.

DR. J. FRANK FRASER: There can be no doubt that the case is an example of the disease described by Kaposi as multiple idiopathic pigmented sarcoma. The question of whether in the light of recent investigations we should continue to regard this condition as belonging to the sarcomas, deserves serious thought. Sequeira, in his latest textbook, said that "histologically and clinically this condition (in his opinion) should be removed from the sarcomas." This view is supported by a number of histologic examinations by English pathologists, who concluded that the lesions were inflammatory and not neoplastic. My own observations would coincide with this interpretation. I have examined perhaps a dozen cases histologically. In none of these did I find any evidence of sarcoma. The earliest changes seemed to be in the capillaries. There was a marked proliferation of the endothelium with an infiltration of mononuclear cells and fibroblasts. Cases have been reported in which true sarcoma developed in the course of the disease, but it does not follow that the original condition was a neoplasm. It is well known that an inflammatory process may undergo changes that end in a malignant process. In some of the reported cases sarcoma supervened not on the Kaposi lesion but apparently as an independent development.

DR. GEORGE M. MACKEE: Dr. Fraser has called attention to a pathologic controversy. In recent years there has been a changing conception regarding the pathology of many cutaneous conditions. The borderline between granuloma and inflammation and between inflammation and neoplasm is perhaps not so sharp as was formerly considered by most dermatologists, hence the difference of nosological opinion regarding conditions such as the Spiegler-Fendt sarcoid, periphlebitis nodularis necrotisans, Kaposi's sarcoma and many others. I have never been able to decide whether or not all cases of Kaposi's sarcoma should be classified as neoplastic, but on considering the disease from every clinical and pathologic angle, it is difficult to avoid the conclusion that it is neoplastic.

Therapeutic results have always been good with the roentgen rays. Arsenotherapy has been proved useful in some cases.

DR. E. R. MALONEY: I have seen a few patients with Kaposi's sarcoma treated with arsphenamine, with good results in a few instances. Other patients have not responded. It seems to me that the best results have been obtained from the use of the roentgen rays. As Dr. MacKee says, the individual tumors disappear fairly well under the rays, but that does not prevent the occurrence of new lesions.

DR. E. F. TRAUB: One of the features of this case was the comparatively short duration—five months—and the development of so many large, scattered lesions. Another interesting feature was the lesion on the right index finger, which only three days ago was much inflamed and about two or three times its present size, appearing much like a large bleeding pyogenic granuloma. Without treatment, this lesion has become much smaller, so that at this presentation it is comparatively innocent, and the problem that I expected to raise about therapy particularly has already been taken care of. There are two other lesions that are much raised and pedunculated, and appear similar to the one on the index finger, all of which could well be removed by surgical diathermy followed by irradiation. I was glad to hear Dr. Fraser's remarks regarding the pathology, and shall try to get some slides from the case for him to study.

A CASE PREVIOUSLY PRESENTED (PEMPHIGUS?). Presented by DR. E. F. TRAUB.

About two or three months ago I presented a patient with bullous lesions on both temples, with a tentative diagnosis of pemphigus. I have been able to follow up this patient regularly, and for the first few weeks new blebs appeared over the old areas and spread to new areas on the face and neck. The eruption grew so much worse that I expected a generalization of the lesions, but strange to say no extension occurred below the neck. The patient was given solution of potassium arsenite internally, but as this was not particularly well tolerated, only small doses were taken. It was suggested that he be given small doses of the roentgen rays, and at weekly intervals a one-fourth skin unit was

given on each side of the face. An immediate improvement took place, and although he is still having occasional new lesions, the acute flare-up has been completely controlled. The patient looks and feels much better than he has for some time. I believe, of course, that this change is merely temporary, but the result certainly was surprising and worthy of note.

NEW YORK ACADEMY OF MEDICINE, SECTION OF DERMATOLOGY AND SYPHILIS

SIGMUND POLLITZER, M.D., *Chairman (pro tem.)*

Meeting, Feb. 3, 1931

A. BENSON CANNON, M.D., *Secretary*

A CASE FOR DIAGNOSIS (LATE SECONDARY SYPHILIS?). Presented by DR. HERMAN FEIT.

K. H., a man, aged 52, born in Germany, a carpenter, first came to the Vanderbilt Clinic on Jan. 29, 1931, complaining of an eruption of the face that had been present for six years. He was married and had two children living and well; his wife had had no miscarriages. He said that he had not had a venereal disease. The patient had had numerous Wassermann tests, which had given negative results. He had never received antisyphilitic treatment.

The lower lip exhibited numerous aggregated, follicular, pustular lesions. On both cheeks there was a group of superficial follicular pustular lesions arranged in a circinate manner. The buccal mucosa, especially at the commissures, showed leukoplakia. There was no scarring. Four retracted scars were seen on the lower part of the back, probably caused after healing of tuberculous lesions of the bone. Examination for tinea gave negative results. The Wassermann reaction had not been reported.

DISCUSSION

DR. EUGENE TRAUB: This may well be a case of syphilis, but if it is, it is a late tertiary lesion rather than any form of secondary syphilis, which would present neither the localization nor the picture seen in this patient.

DR. JOSEPH J. ELLER: Clinically, the case looks like tertiary syphilis, but it also resembles somewhat a case of tuberculosis of the skin in the bearded region of the chin shown in the "Iconographia" as a sarcoid of Boeck. The duration of five years would be unusual for a serpiginous tertiary syphilid or tuberculosis without more scarring or destruction.

CASES OF LUPUS ERYTHEMATOSUS AND LUPUS VULGARIS (TREATED BY INTRACUTANEOUS INJECTIONS OF A GOLD COMPOUND INTO THE LESIONS). Presented by DR. EUGENE F. TRAUB.

J. D., a man, had had lupus erythematosus below and behind both ears for four years. He had received no previous treatment. Beginning Dec. 15, 1930, he had received local intracutaneous injections of a gold compound as follows: December 15, 10 mg. into the lesion on the right side; December 22, 16 mg. total into both sides; December 29, 15 mg. total into both sides; January 5, 20 mg. total into both sides. On Jan. 26, 1931, the lesion on the left side was almost clear, and an injection of 20 mg. total was made into both sides.

S. S., a man, had had lupus erythematosus for two years. From June 12 to Oct. 21, 1930, the patient had received four intravenous injections of 25 mg. of a gold compound and twenty injections of 50 mg., with only slight improvement. Beginning October 21, the patient received the following local intradermal injections: October 21, 5 mg.; November 1, 10 mg.; November 11, 10 mg.; November 18,

5 mg. On November 24, no activity was present. The patient had received no treatment since that date.

D. T., a woman, had had lupus erythematosus on her left cheek since the summer of 1930. On October 29, she had received 25 mg. of a gold compound and on November 18, 50 mg. intravenously, with slight improvement. One day after the last injection, she complained of generalized itching. Beginning December 22, the patient received the following local intracutaneous injections: December 22, 2 mg.; Jan. 12, 1931, 3 mg. On January 26, the lesion on the face was clear.

P. S., a woman, had had lupus erythematosus on her face and the left foot for one year. Under intravenous treatment with a gold compound, the eruption had disappeared. Recurrence on the face and the left foot took place, beginning about six weeks ago. The following local intracutaneous injections were given with marked improvement: Dec. 30, 1930, 4 mg. to the right cheek, and 6 mg. to the left foot; Dec. 22, 1931, 4 mg. to the right cheek, and 6 mg. to the left foot.

D. R., a woman, had had lupus erythematosus on the elbows for three months; it had been present on the face for one month. No intravenous treatment had been given. The patient received local injections of a gold compound, as follows: Dec. 17, 1930, 15 mg. to the left elbow; December 24, 15 mg. to the right elbow; December 31, 10 mg. to the left elbow, and Jan. 7, 1931, 20 mg. to both elbows. On January 30, the lesion on the left cheek had completely disappeared without injection into the area; that on the nose had remained about the same. The lesions on the elbows were improved. Twenty-five milligrams was injected into both elbows and 3 mg. into the side of the nose.

T. D., a woman, had lupus vulgaris of the nose, which had been present for fourteen years. She had received numerous types of therapy. Beginning Nov. 12, 1930, she had received local intracutaneous injections of a gold compound as follows: November 12, 24 mg.; November 26, 10 mg.; December 10, 15 mg.; December 26, 15 mg., and Jan. 14, 1931, 8 mg.

DISCUSSION

DR. EUGENE TRAUB: The cases presented are of patients we have had under treatment at the Stuyvesant Square Hospital (formerly the New York Skin and Cancer Hospital), and Dr. Monash is directly responsible for their treatment.

In recent years, various gold compounds have been used a great deal intravenously, especially in cases of lupus erythematosus, and a number of unpleasant sequelae have resulted, including some fatalities and some very severe cases of exfoliating dermatitis. As no one was exactly certain how the gold compound would act when administered intravenously, we felt that if the gold itself was responsible for the favorable results, a higher concentration of gold in the lesion would be desirable. In addition, we felt that perhaps intracutaneous injections would be less liable to unpleasant after-results.

In using various preparations and solutions, the patients who were to be given the gold compounds were first tested on the skin of the forearm or elsewhere to determine whether staining, sloughing or ulceration might occur. A brief preliminary report of our early results will appear in the ARCHIVES (Monash, S., and Traub, E. F.: Modification of Therapy with Gold Compounds in Lupus Erythematosus: Preliminary Communication, ARCH. DERMAT. & SYPH. **24**:110 [July] 1931). The patients selected for treatment all had unquestionable lupus erythematosus except in one or two instances, and in these cases a biopsy was performed to confirm the diagnosis. The discoid or discrete type of lesion is the most suitable for this therapy. The disseminated cases in which there are a great many lesions have not as yet been studied sufficiently, but probably will not respond as readily as to intravenous therapy. We have treated one or two patients when they had a number of lesions on the face, especially of the acute type, and all of the lesions have disappeared about the same time with the treatment of one lesion.

It is possible that our method of intradermal treatment might satisfactorily be combined with the intravenous treatment. Most of our patients selected in the beginning had had a great many intravenous treatments without result, some hav-

ing received as many as sixty intravenous injections at various dispensaries. Several such cases responded to two or three intradermal treatments. In most instances, we have made the injection into the lesion itself, but we are also trying injections at sites adjacent to the lesions. Other metals besides gold, as well as foreign proteins, etc., are to be tried to determine, if possible, whether or not it is the gold itself that is responsible for the favorable result.

As regards dangers such as scars, pigmentation and the like, as intimated, we found, from testing the skin before actually using the method, that nothing was to be feared from the intradermal administration of a gold compound. The only unpleasant feature is a rather marked local reaction, and we advise the patients to put on wet dressings or an ice pack. This local swelling usually subsides within from twenty-four to forty-eight hours.

In the series of patients presented, all but one had lupus erythematosus, the one having lupus vulgaris. The case of lupus vulgaris was particularly interesting because the patient had had the disease for many years and for a final solution had been referred to the plastic surgery department. As was seen, the few local injections we have given in this case have apparently almost eradicated the process.

We have shown this series of cases in order that all may become familiar with our method, as we have noted improvement in all of the patients so treated. I suggest that Dr. Monash be given the privilege of discussing these cases.

DR. SAMUEL MONASH: Before beginning the treatment of these patients, we made preliminary intracutaneous tests with a 1 per cent solution of gold sodium thiosulphate. As a rule, twenty-four hours after the intracutaneous injection into the forearm, there is an erythema about 1 cm. in diameter with a central vesicle that progresses to crust formation; infiltration is common and usually passes off quickly. Only one patient, who had received many intravenous injections of gold compounds previously, showed an infiltration that persisted for three weeks. We have had other patients who have received gold compounds intravenously and intracutaneously in whom the injection into the arm did not give rise to an infiltration.

About a week or so after the preliminary intracutaneous injection into the arm, if we see no deleterious effect, as we have not thus far, we make injections directly into the lesions, using a 1 per cent solution of gold sodium thiosulphate mixed with procaine hydrochloride. The latter is added to eliminate the pain caused by an intracutaneous injection of a gold compound. The solution is prepared, for example, by dissolving 100 mg. of gold sodium thiosulphate in 10 cc. of 0.5 per cent procaine hydrochloride. In injecting, we generally make wheals in the surface of the lesion; for a lesion of 1 square inch, possibly 1 cc. or 1.5 cc. equivalent to from 10 to 15 mg., might be required.

As Dr. Traub said, there is usually a local reaction following these injections into the lesion. This reaction is manifested by swelling, and often vesicle and crust formation. The swelling is controlled by the use of cold applications and lasts only a day or two. If the reaction is too severe, we reduce the concentration of the gold compound to 0.5 per cent. We generally repeat the injections at weekly intervals. If the effect of the previous injection has not worn off at the end of a week, we delay treatment for another week. We have thus far had no bad results, general reactions, pigmentation or scarring as a result of the injections. The scaring seen in some of the patients presented was present before we began our treatment.

DR. MARION SULZBERGER: Dr. Traub and Dr. Monash are to be congratulated in calling to our attention this type of therapy. A great many cases prove refractory to intravenous therapy with a gold compound, and it is not without danger. Only further experience with this method will show whether we are dealing with a specific therapeutic effect or with a destructive process. We know that one can sometimes obtain good results in cases of discoid lupus erythematosus with carbon dioxide or with other destructive processes that leave very little scarring. Another question is whether or not it may be dangerous to inject a gold compound intradermally into a human being on account of the

possibility of sensitizing the skin. Intradermal injections of arsphenamine and other known chemicals do, in a certain percentage of cases, sensitize the entire skin of the patient to the drug, as Frei was able to demonstrate. There is a possibility that some of these patients may be given gold compounds, intravenously later, and that a higher percentage of dermatitides may develop.

DR. HENRY C. SAUNDERS: I congratulate Dr. Traub on the results obtained. I am interested because in a report of thirty-two cases that I made three years ago, there was a large percentage of clinical cures. There were a few patients who were resistant, on whom little, if any, impression was made with intravenous therapy. Of those who were apparently cured, several returned with a recurrence of the lesions. In most cases, the patients failed to respond to a second course of treatment. I am inclined to think that the local treatment will be of especial benefit in both types of patients, i. e., those who fail to respond to intravenous therapy, and those in whom relapses occur.

DR. ELIAS ABRAMOWITZ: Dr. Jay F. Schamberg reported (Chrysoderma, ARCH. DERMAT. & SYPH. **18**:862 [Dec.] 1928) a greenish-blue discoloration of the skin of the arm following an intravenous injection of a colloidal gold preparation. (The needle had slipped outside the vein during the course of the injection.) I have noticed on several occasions that the site of the needle puncture, into which the intravenous injection of gold and sodium thiosulphate was made, showed a bluish pinpoint discoloration. This seemed to disappear in a week or so. Schamberg and Culver have noted a similar occurrence. I would like to know whether the investigators have noticed any such thing in their cases.

DR. PAUL GROSS: The question as to whether we are dealing with a specific effect of the gold compound or a nonspecific and inflammatory reaction can be cleared up by the fact that Wirz, several years ago, applied a gold compound locally by means of iontophoresis with good results. I believe that the results demonstrated tonight are good.

DR. EUGENE TRAUB: Dr. Monash did not mention the fact that the procaine hydrochloride we are using does not contain epinephrine. There is no pigmentation or discoloration in any of the cases shown, and we have not noted any in the patients treated in the dispensary. Whether the favorable result is due to the gold compound coming into immediate contact with the diseased process, I do not know. We are planning to try to throw light on the subject.

DR. SAMUEL MONASH: In regard to sensitization of the skin to gold compounds mentioned by Dr. Sulzberger, there is an article by Moore and his associates in the January, 1931, issue of the ARCHIVES on sensitization of the skin to neoarsphenamine. Dr. Sulzberger also did some work on the same subject with guinea-pigs. Both authors found that intracutaneous injections of neoarsphenamine gave rise in many cases to delayed reactions in from three to four weeks.

We have been making intracutaneous tests on the forearm, using 1 per cent, 0.5 per cent and 0.1 per cent solutions of gold sodium thiosulphate. Up to the present time, we have noticed no delayed reactions like those reported with neoarsphenamine. We have repeated these injections after the patients have had both intravenous and intracutaneous injections of the gold compound. While in some cases a very slight increase in sensitivity of the skin has been noticed, in others there was no increase. Our experiments thus far, though still incomplete, seem to show that the skin does not become sensitized to any great extent by either intracutaneous or intravenous injections of gold sodium thiosulphate.

DR. MARION SULZBERGER: Dr. Monash's points are very well brought out and absolutely correct. While I could sensitize the skin of animals with arsphenamine, my attempt to do so with a gold compound was unsuccessful. I reported these findings in the ARCHIVES **20**:669 (Nov.) 1929.

It is, of course, not a foregone conclusion that human beings will not become sensitized to gold salts; the occurrence of dermatitides caused by a gold compound in human beings speaks against this deduction, and for extreme caution.

DR. ADOLPH ROSTENBERG: I had a patient, a young girl, with the discoid type of lupus erythematosus under my care for a long time. It was difficult to

give her an injection as she had a very fat arm, and it was very difficult to find the vein. I gave her one course of treatment about two years ago, and the condition cleared up; however, a recurrence took place six months ago. On her return for treatment, I could not make an injection into the vein, so I injected the fluid outside the vein, and was surprised that she did not complain of much pain. Owing to this good result, I repeated the procedure the next time, giving six or seven injections subcutaneously without causing any discomfort. The condition cleared up completely under this treatment.

DR. HENRY C. SAUNDERS: In my series of cases there were some accidential infiltrations, and the patients did not complain of pain. As I stated in my report one patient, because we were unable to find the veins, was treated intramuscularly and was cured.

BLASTOMYCOSIS. Presented by DR. GEORGE C. ANDREWS.

P. G., a man, aged 30, an Italian, was previously presented before the Section in January, 1931, by Dr. Andrews for Dr. McNitt.

DISCUSSION

DR. GEORGE C. ANDREWS: This is rather an extensive case of three years' duration. The patient was treated previously by Dr. Mitchell of Chicago. At that time he had lesions on the face, which cleared up. There was a recurrence about a year ago, with lesions on the buttocks and back and around the neck. The most interesting lesion was the one like a collar, which spread around three fourths of the neck—a bandlike lesion. Organisms were demonstrated by smears, cultures and animal inoculation. Biopsy revealed a characteristic microscopic picture. The patient has received roentgen, radium and iodide therapy; he has not tolerated the iodide very well and has had mostly inhalations

DR. J. GARDNER HOPKINS: The problem of how best to treat this patient was difficult, and I hoped that other members who had had experience with this disease might have suggestions.

If one compares the lesions with the photographs presented, it will be seen that there has been a very marked improvement with intensive doses of filtered x-rays and radium, in spite of the fact that previous treatment with fractional doses of x-ray produced very little change.

We are interested in the possibilities of other methods of treatment. Bowen once reported good results from curettage and cauterization of the lesions. We hesitated somewhat to produce an open wound in the presence of this infection, but one lesion on the buttock of this patient was treated by electrodesiccation. It is now almost completely healed, and there is evidence of reinfection.

DR. JOHN FRANK FRASER: I remember the patient. I was very much impressed with the amount of improvement that had taken place in such a short period. Dr. Hopkins succeeded in reproducing the disease in a monkey; as far as I am aware, this is the first time blastomycosis has been produced in a monkey by inoculation.

DR. MARION SULZBERGER: In connection with experiments with blastomycosis on animal's, I wish to add that Ramel succeeded in inoculating guinea-pigs with this organism.

DR. SIGMUND POLLITZER: I have no doubt that this infection might be conveyed to a great many different animals. I do not think that the blastomycosis organism is very selective.

A CASE FOR DIAGNOSIS (MOLLUSCUM CONTAGIOSUM?). Presented by DR. MAX SCHEER.

P. P., a boy, aged 13, presented himself at the skin clinic of the New York Post-Graduate Hospital with an eruption of one month's duration. The eruption had spread diffusely over the anterior wall of the chest, the abdomen and the

upper part of the anterior aspect of the thighs. The individual lesions were small papulovesicles with a distinct tendency toward grouping. Many of the lesions were distinctly pustular and on expression yielded necrotic, seropurulent material. Subjectively, the eruption was accompanied by a good deal of itching, although the only evidence of pruritus consisted of a number of primary lesions along a scratch line, in the right inguinal region.

Iodide and bromide patch tests gave negative results. A search for molluscum bodies was similarly fruitless. Bacteriologic examination (cultural) also gave negative results.

DISCUSSION

DR. OSCAR LEVIN: The case presents lesions that are papular, some umbilicated and others necrotic. I offer the diagnosis of molluscum contagiosum.

DR. JOSEPH J. ELLER: I think that this is a case of molluscum contagiosum, and that the diagnosis can be proved microscopically if other lesions are removed and examined.

DR. GEORGE C. ANDREWS: In spite of the negative microscopic observations, it is my clinical impression that the case is one of molluscum. I found a quite typical lesion on the right upper pectoral region. There are some linear lesions in scratch marks. The eruption is distributed on areas the patient can reach with his hands; there are no lesions on the back. The distribution suggests autoinoculation.

DR. MAX SCHEER: Molluscum contagiosum was the first diagnosis suggesting itself to us when the patient was first seen; however, the eruption is of one month's duration, and there are a large number of lesions, some of fair size, but not a single undoubted lesion of molluscum could be found. I saw the lesion that Dr. Andrews referred to; I examined it carefully under a lens in the clinic and saw no umbilication. It was a small papulopustule about the size of a pinhead. A report of the biopsy has not been received as yet. Clinically, I thought of the possibility of an eruption caused by iodide, but there is no history of the ingestion of iodide or of iodized salts.

MYCOSIS FUNGOIDES (?) DERMATITIS EXFOLIATIVE (?). Presented by Dr. A. BENSON CANNON.

K., a man, aged 59, ten years prior to presentation had begun to have intensely itching patches the size of a half dollar and larger, which became confluent and gradually spread over the entire skin. He had lost his eyebrows two or three years prior to presentation. He had numb sensations at times in his hands. He had had urethritis ten years and also three years prior to presentation. Five years prior to presentation, his Wassermann reaction had been reported as negative. No antisyphilitic treatment had been received. He had been taking various tonics and laxatives. The patient had come from Bermuda.

The entire surface of the skin was dry, thickened and markedly infiltrated with occasional scaling pigmented spots scattered over the upper extremities. The soles were hyperkeratotic and thickened with marked fissuring. The palms were practically free from infiltration and scaling. In the right temporal region there was a tumor the size of a walnut, hard and covered with thin skin. Alopecia was present in the region of the eyebrows, as well as in the axillary region. The growth of hair in the pubic region was very poor.

The pupils did not react equally, the left reacting more briskly to light and in accommodation than the right. The lungs were normal. Examination of the heart revealed a presystolic murmur at the apex. Palpitation disclosed an enlarged liver with tenderness in both hypochondria. The spleen was normal. The reflexes were normal. Pain, temperature and vibratory sense were normal. The sense of touch was generally impaired because of the cutaneous condition. The sense of position in the toes was normal.

The blood count showed: hemoglobin, 70 per cent; red cells, 4,700,000; white cells, 8,500; polymorphonuclears, 58 per cent; small lymphocytes, 34 per cent; large

lymphocytes, 8 per cent. On July 29, 1930, the Wassermann reactions of the blood was 4 + to both antigens, and the Kahn reaction was 6 +. On December 16, the Wassermann reaction of the blood was 3 + in alcohol and 3 + in cholesterol; and the Kahn, 5.0.

On Sept. 2, 1930, chemical analysis of the blood showed sodium chloride, 479.3 mg.; sugar, 100.4 mg.; bile, 12.5 mg.; urea nitrogen, 15.85 mg.; uric acid, 6.50 mg.; on December 9, it showed: sodium chloride, 528.3 mg.; sugar, 89.4 mg.; bile, 9.36 mg.; urea nitrogen, 13.4 mg., and uric acid, 4.35 mg.

Skin taken from the right shoulder contained 0.52 mg. of arsenic per hundred grams of dry specimen. On August 12, the blood contained 0.13 mg. of arsenic; on September 23, 0.24 mg., and on October 9, 0.13 mg.

Since September 2, the patient had received eighteen intravenous injections of bitartrate and sixteen of sodium thiosulphate.

The patient's skin seemed softer and more exfoliating.

DISCUSSION

DR. SIGMUND POLLITZER: This patient gives the impression of being a Chinaman, and perhaps on that account and the thinning of his eyebrows, most of us thought of lepra. He comes from Bermuda, however, where there is no leprosy. He has never been in the West Indies, and there are no signs of leprosy.

DR. J. GARDNER HOPKINS: The diagnosis is extremely difficult. We see these cases again and again and discuss the possibility of the presence of premycosis, of arsenical dermatitis or of a lymphogranuloma other than mycosis fungoides. Whether or not some of these represent the group of true pityriasis rubra of Hebra I do not know.

ACTINOMYCOSIS. Presented by DR. GEORGE C. ANDREWS.

L. L., a man, aged 56, a Greek, was previously presented before the Manhattan Dermatological Society in May, 1930.

DISCUSSION

DR. GEORGE C. ANDREWS: This case has been difficult from a diagnostic point of view, in spite of the fact that the patient gave a history of having had positive smears for actinomycosis about six years ago. For the past two years he has been studied from all angles, and only recently has the organism been demonstrated. During the period when we were trying to discover the diagnosis, we thought of many conditions, particularly of rhinoscleroma. He has not done well under iodide therapy. He thought that the iodide made him worse. He has responded splendidly to the x-rays. One-third erythema dose of high voltage x-rays has been applied to each side of the face for the past three or four months. The patient is very much better as a result of this treatment.

DR. J. GARDNER HOPKINS: I have recently seen a case from which an aerobic organism was isolated. Curiously, this patient gave no reaction to skin tests with extracts of his Actinomyces.

DR. GEORGE C. ANDREWS: Histologic examination showed a granuloma with numerous plasma cells, epithelioid cells, and fibroblasts and areas of necrosis.

DR. SIGMUND POLLITZER: In regard to the differential diagnosis between actinomycosis and rhinoscleroma, the histologic picture of rhinoscleroma is perfectly characteristic; if you do not find the characteristic cells, the condition is not rhinoscleroma.

DR. GEORGE C. ANDREWS: This is the third case of actinomycosis of the cervical region following the extraction of teeth we have had in the last two years. Many physicians do not realize the frequency with which actinomycosis follows the extraction of a tooth.

DR. SIGMUND POLLITZER: It is noteworthy that in cattle the infection usually takes place through the mouth; the organism penetrates the gums and produces the condition called "lumpy jaw" by veterinarians.

SECONDARY SYPHILIS. Presented by DR. LEO SPIEGEL.

J. O., a man, aged 27, was first seen on Jan. 22, 1931. Examination showed phimosis with considerable underlying hardness and edema of the tissues. The Wassermann reaction of the blood was negative with both alcoholic and cholesterolized guinea-pig heart antigens and icebox fixation. The patient admitted exposure on Jan. 1, 1931, and also one month previous to that. He said that a sore had been present for about ten days, and that he had been unable to retract the foreskin for the past three or four days.

He was seen again on January 29, when a dorsal incision was advised, and he was referred to the surgical department of the Lenox Hill Hospital. Unfortunately, petrolatum was applied following the incision so that a dark-field examination was impossible. A second Wassermann reaction of the blood was negative. On January 31 and February 2, the Wassermann reaction was again negative, and on the latter date examination revealed a faint macular eruption. On February 3, a dark-field examination gave positive results, and the roseola was most pronounced. There was a slight left inguinal indolent adenopathy.

DISCUSSION

DR. CHARLES WOLF: I agree with the diagnosis as given, but I would also suggest the possibility of a chancroid infection complicating the initial lesion. Of course, the lesion should clear up under antisyphilitic treatment; in the event it does not clear up entirely, perhaps infection with the Ducrey bacillus will be more obvious.

DR. ELIAS ABRAMOWITZ: I think that it would be advisable to scrape one of the macules to see if spirochetes are present. I would like to know why the Kahn tests were not performed in this case; the Wassermann reaction might be delayed. I do not look on it as a case of malignant syphilis, but one of those in which the reagin bodies do not appear in the blood until relatively late in the disease.

DR. A. BENSON CANNON: I think that in such a case the reliability of the Wassermann reaction is always open to question. I discussed with Dr. Keidel of Johns Hopkins, about a year ago, the frequency with which one encountered a negative Wassermann reaction in cases showing a secondary syphilitic eruption, and I was surprised to hear him say that he had found that 2 per cent of his patients with secondary syphilis had negative Wassermann reactions; he interpreted this finding as indicating a lack of resistance to the infection on the part of the patient. That had never been my experience. I had always found a positive Wassermann reaction in some degree in patients with secondary manifestations of the skin. About six months ago, we had a patient at the Vanderbilt Clinic with an initial lesion and an atypical macular and papular eruption over the body and extremities whose Wassermann reaction was reported negative on several occasions. I repeated the Wassermann test and found that while the two previous laboratories continued to find a negative reaction, my laboratory reported a 1 + cholesterol, a negative alcoholic and a 2 + Kahn reaction to the precipitation test. We all know that in cases of malignant syphilis we do occasionally get a negative reaction. The patient presented has no evidence of malignant syphilis. This condition is diagnosed by the clinical appearance of the lesions rather than by what may develop.

DR. LEO SPIEGEL: This case is very interesting to me. The infection took place in December. I checked up on the various blood tests. I went to the laboratory, and there were a number of positive reactions on the same days that these tests were made. As regards Dr. Wolf's statement, I do not believe that there is a complicating Ducrey infection, because there is practically no glandular enlargement and the patient does not complain of pain. The dorsal incision makes this ulcerating lesion on the prepuce look much larger than it really is.

As regards the negative Wassermann reaction, Stokes reports negative Wassermann reactions in 1.5 per cent of untreated patients with frank secondary syphilis. MacFarland and Stokes, in a series of 231 cases of early secondary syphilis, found

negative Wassermann reactions in 5, in which Spirochaeta pallida was found by dark-field examination. This coincides with the experience of Dr. Cannon.

Flocculation tests have not as yet been made.

LUPUS VULGARIS AND LICHEN SCROFULOSORUM TREATED BY DIET. Presented by DR. PAUL GROSS.

L. T., a colored girl, aged 19, was admitted to the Presbyterian Hospital on June 12, 1930. She had received treatment previously, including injections of a gold compound which resulted in slight improvement, At the hospital she received different local and general treatments without any marked results. Since October 1, the patient had been put on the Gerson-Sauerbruch diet combined with generalized ultraviolet ray treatments.

On admission, the patient presented a hypertrophied and ulcerated lupus vulgaris covering the forehead, cheeks and nose and the mucous membrane of the nose. She also had a lichen scrofulosorum.

She was presented to demonstrate the improvement after four months' treatment with a salt-free diet. The lesions on the face had flattened considerably. The best improvement was in the center of the lesion and around the right eye. The lichen scrofulosorum had disappeared, but following irrigation of the antrum the lupus had become more exudative and the lichen has broken out again on the trunk and also on the face and neck.

Biopsy showed lupus vulgaris of the face and lichen scrofulosorum of the body.

DISCUSSION

DR. PAUL GROSS: This patient was presented to show the results of four months' treatment with a salt-free diet. There has been considerable improvement, and we feel encouraged to keep the patient on this diet for another few months; even if a complete cure is not accomplished, the remaining condition will yield better to therapeutic measures than before.

DR. ELIAS ABRAMOWITZ: The result is excellent. Was the patient put on a salt-free diet, or a diet poor in salt? Some investigators claim results with a diet poor in ordinary salt, plus a low amount of protein and carbohydrate with a large amount of fat and vitamins.

DR. HERMAN SHARLIT: Was the patient hospitalized?

DR. J. GARDNER HOPKINS: The improvement that occurred while the patient was on the Gerson diet may not be obvious from comparison with the previous photographs to those who have not followed the case. The most striking change has been in the vision. When she started this treatment, she had a keratitis of her remaining eye and marked involvement of the lids, so that she could hardly see her way around. Now she can read with ease. There is also a distinct flattening out of the central portions of the lesions on the cheeks.

DR. DAVID BLOOM: In looking over the German literature of the last five years and especially of the last year, as to the effect of the so-called "salt-free diet" on lupus vulgaris, one is particularly impressed with the reports from Jesionek's clinic at Giessen, and one is convinced of the favorable effect of this therapy.

Though there are some doubt and disagreement as to the effect of this diet on tuberculosis of the lungs, there seems to be no doubt as to the great value of this treatment in tuberculosis of the joints and soft tissues and particularly of lupus vulgaris of the skin. Combined with the usual recognized therapy, as, for instance, the general sun or quartz light irradiations and other hygienic measures, there is no doubt in my mind that this dietary treatment is the therapy of choice for lupus vulgaris.

DR. A. BENSON CANNON: I should like to add my testimony to that of Dr. Hopkins in regard to the improvement in this girl's condition. I have observed her case for six or seven years, and I showed her to this section on two different occasions from the service of the City Hospital. The condition of the lesions of the face had become progressively worse in spite of the various forms of treat-

ment, such as generalized carbon-arc light, Kromayer light, tuberculin and injections of a gold compound, although the lesions of lichen scrofulosorum that she had on her body and the marked eczematized condition that she had in the axillae and groin did disappear.

The thing that impressed me most at Copenhagen was a paper on the "Treatment of Tuberculosis of the Skin with a Salt-Free Diet." I saw the most astounding cures, with the disappearance of terrifically large and ulcerated lesions, following the use of a salt-free diet. I think that everyone should try this diet in the treatment for tuberculosis of the skin, carefully observing the case in order to guard against accidents, such as disseminated tuberculosis and infections of various kinds. The cosmetic results are also superior to those obtained with any other forms of treatment that I have seen.

DR. SIGMUND POLLITZER: I saw one case of pemphigus in Hamburg, in which the patient was treated with a salt-free diet. In the course of three months, the lesions had completely disappeared and the patient was apparently cured.

DR. PAUL GROSS: I was much impressed with the excellent results of the Gerson-Sauerbruch diet demonstrated from Jesionek's clinic at the Congress of the German Dermatological Society in 1929. After Dr. Hopkins returned from Copenhagen, he asked me to start work with this method. It was the simplest matter, thanks to our excellent diet kitchen, which is fully equipped for the salt-free regimen, as used, for instance, in nephritis. It simply meant the establishment of a proper proportion of carbohydrates, fats and proteins and by frequent meals about 2,700 or 3,000 calories a day. Of course, the secret of success is to make the food appetizing. Hospitalization is absolutely necessary unless the patient can afford a private dietitian. Phosphorized cod liver oil and a mineral salt mixture were given, as prescribed by Herrmanndorfer. After periods of discouragement on the part of the patient and ourselves, we finally began to see results. The fact that tonight's presentation is not so convincing is due to an interesting occurrence.

The patient had lately been complaining of a headache and inflammation of the paranasal sinuses, especially of the right antrum, as was demonstrated by the x-rays. Following irrigation treatment of the nasal cavity, the lupus became more exudative and the lichen scrofulosorum, which had been absent for several months, broke out very strongly again, even on the face and neck. This may give some clue for a tuberculous focus, and investigation will be continued. The diet has distinct value, especially in a case like this, involving the mucous membrane, the eyes and other areas.

In regard to pemphigus, the retention of sodium chloride in this disease has been known for years, but was interpreted more as a salt hunger of the tissues. The beneficial effect of a salt-free diet, as mentioned by Dr. Pollitzer, seems to point in a different direction.

VITILIGO; POSTARSPHENAMINE DERMATITIS. Presented by DR. A. BENSON CANNON.

R., a man, aged 32, was referred to the dermatologic department of the Vanderbilt Clinic in June, 1930, from the medical department, where he had been treated for acute pharyngitis. He complained of weakness in the knees and of fatigue. On his chest and on the left leg were areas of vitiligo, varying in size from that of a pea to that of a bean. He said that he had not had a penile lesion or a secondary eruption. On June 30, the Wassermann reaction was negative; on July 23, the reaction in cholesterol was 2 +, and the Kahn reaction was negative.

Physical examination gave negative results, except that a roentgenogram of the chest showed the shadow of the heart to be slightly enlarged. From July 30 until September 11, the patient had received 4 mg. of neoarsphenamine, a total dosage of 1.95 Gm., and four intramuscular injections of bitartrate. During the last intravenous injection, the right intracubital vein was tried unsuccessfully, and the injection was made into the left arm. Five days later, the patient noticed an eruption in the intracubital regions. One week later a generalized arsenical

dermatitis broke out. Pruritus was intense. After eight intravenous injections of sodium thiosulphate, the pruritus subsided; the patient had marked generalized exfoliation. On the sites of the previous manifestations, depigmented areas developed simultaneously with hyperpigmented spots over the abdomen, back and lumbar region. Later, depigmented areas appeared on the upper lip and the scalp. The areas were free from dermatitis. Pinprick sensation was equal, but it was more dull over the old vitiligo spot on the chest. On the right thumb-nail, a dystrophic spot appeared.

The Wassermann test was done three times. In November, 1930, it was reported as negative, and the Kahn reaction was 1.0. On September 23, chemical analysis of the blood showed: sodium chloride, 446 mg.; sugar, 99 mg.; bile, 9.36 mg.; urea nitrogen, 7.14 mg., and uric acid, 7.57; on December 2, it showed sodium chloride, 429.3 mg.; sugar, 111.2 mg.; bile, 13.39 mg.; urea nitrogen, 8.89 mg., and uric acid, 5.27 mg. On November 25, the pulse rate was 72; the temperature, 97.4 F.; the weight, 79.4 Kg., and the basal metabolic rate, + 10 per cent. On December 9, the Wassermann reaction of the spinal fluid was negative; the colloidal gold curve was 1112111000.

Since December, 1930, the patient had been under the care of the department of endocrinology and had received thyroid extract pills. He stated that he felt less "nervous," and that the few small spots of vitiligo over the left wrist had disappeared. The spot on the upper lip was getting darker.

Biopsy showed chronic dermatitis with numerous pigment-containing cells in the corium.

Intradermal tests with neoarsphenamine, arsphenamine and silver arsphenamine in various dilutions gave positive results.

DISCUSSION

DR. OSCAR LEVIN: There are cases reported in the literature that show loss of pigmentation due to the effect of arsenic. The pigmentary changes are believed to be caused by the action of the arsenic on the vegetative nervous system. In a recent case of arsphenamine dermatitis there were alopecia, areas of vitiligo and changes in the secretion of sweat; especially noted was the absence of sweat in the pigmented areas. There were also evidences of disturbances in the nervous system.

DR. HERMAN SHARLIT: This patient shows all the disabilities mentioned by Dr. Levin as occurring in a similar case that he saw. Not only is there vitiligo, but the depigmented areas show anhidrosis and alopecia as well, a good illustration of the evidences of paralysis of the branches of the sympathetic nervous system to the skin and its appendages due to arsenic.

DR. A. BENSON CANNON: We have had several such cases of leukoderma in colored people following arsphenamine dermatitis. Usually arsphenamine dermatitis, as you know, is followed by dark brown to black pigmented areas in colored people instead of depigmented spots. Although this patient had a few light-colored spots on the skin before taking arsphenamine, as did the three with similar cases whom we saw, in each instance the leukodermic areas have become decidedly whiter, and many new and much larger areas of vitiligo have appeared even on the mucous membranes and scalp and other parts of the skin not affected by the dermatitis. I think that the association of vitiligo with arsphenamine dermatitis is a rare finding and one to which attention has not been called before. It is possible that the development of vitiligo following arsphenamine dermatitis might prove an etiologic factor in the development of other cases of vitiligo in which there has been a history of the intake of arsenic.

FOOD ECZEMA. Presented by DR. J. GARDNER HOPKINS.

S. Q., a woman, was admitted to the Vanderbilt Clinic in February, 1930, with a generalized eczema that had been present ever since she could remember. She had had marked remissions every summer, but had never been entirely free.

On the face and neck was a diffuse, infiltrated, scaling dermatitis. The skin of the arms, trunk and thigh was dry, with fine branny desquamation and scattered excoriated papules. There were patches of lichenification on the dorsa of the hands.

Positive skin reactions were obtained to grapefruit, orange, gliadin and staphylococcus extract. The Prausnitz-Kustner reaction was positive to grapefruit.

After being placed on an elimination diet, the patient showed definite exacerbation following the taking of milk, potato and tomato. She remained entirely free from the eruption for periods as long as three months. Exacerbations followed when she broke the diet.

At the time of presentation, the patient had a slight exacerbation following an attempt to desensitize to egg, wheat, milk, orange, grapefruit, potato and tomato by subcutaneous injections.

The case was presented as an instance of eczema due to food sensitization and completely controllable by diet without other measures.

DISCUSSION

DR. J. GARDNER HOPKINS: I merely wish to call attention to the fact that there are cases of chronic eczema in adults that seem to be due exclusively to sensitization to foods. They have certain clinical characteristics that enable one to suspect such an etiology. Usually the disease begins in infancy. It is usually most marked on the face, neck, flexor surfaces of the elbows and popliteal region, and frequently the patients give a history of spontaneous amelioration in the summer. The case presented shows a slight relapse. Three or four weeks ago the skin was normal. This relapse we believe to be due to the fact that we have recently attempted desensitization, and that during this period the patient has been receiving subcutaneously a mixture of the foods that we believe are the cause of the eruption.

TULAREMIA (ULCEROGLANULAR TYPE). Presented by DR. J. GARDNER HOPKINS for DR. SAMUEL M. KAUFMAN.

M. G., a German woman, aged 45, was first seen in the skin clinic of the Vanderbilt Clinic on Jan. 26, 1931, with a history of a sore on her left little finger and the right index finger of about two weeks' duration. She had been entirely well except for "rheumatism" a month or more prior to presentation.

One month prior to presentation pains had developed in the elbow joints following a heavy washing, and in a few days a heavy cold in the head began. The latter had persisted for about two weeks and was accompanied by chills and fever. Just as the patient was recovering from the "cold" and after the pains in the joints had disappeared, she noted a small area of soreness about the tip of the left fifth finger. As she had injured this finger while manicuring a few days previously, she felt that she might have "infected it," and so she dipped it into very warm boric water and also applied a preparation of surgical solution of chlorinated soda and later a black salve. About the same time she noted a small pimple on the right index finger. As she had injured that finger frequently by snagging it on a piece of broken enamel on the stove, she felt that a small piece of enamel had become embedded in the skin of the finger, and so she treated it the same as the other finger. After about a week of home medication, the condition became worse, and the patient came to the clinic where she was first treated in minor surgery and then referred to the skin department. During her five day period of observation, the lesions did not change materially, and on January 26, when the clinical diagnosis of tularemia was suggested by Dr. Kaufman, she showed the following lesions: (1) On the volar surface of the right index finger there was an area of erythema 2 by 3 cm. with moderate induration, in the center of which was a 1 cm. sharply circumscribed ulceration about 0.25 cm. deep, the base of which showed good granulation tissue; the edges were slightly undermined and exuded

a greenish-gray, thick, odorless pus. (2) On the dorsal surface of the left little finger circumscribing the dorsal and lateral half of the nail was a jagged ulceration about 1 by 0.5 by 0.25 cm. surrounded by slight erythema. Except in outline, it was similar to the other lesion. There was almost no tenderness. (3) The epitrochlear lymph glands were markedly swollen, the right measuring 5 by 2 cm., and the left, 3 by 2 cm.; the glands were matted, hard and slightly tender. The temperature was 99.4 F.

During the period of observation (Jan. 25, to Feb. 2, 1931), the ulcer on the right hand had definitely improved. The skin over the right epitrochlear gland had become erythematous, and the glands had softened. The only treatment had been continuous dressings of permanganate to the fingers and rest.

Dark-field examination and the Wassermann test gave negative results. The patient's serum agglutinated Bacterium tularense in a dilution of 1:640, and Bacillus abortus in a dilution of 1:20. Inoculation into a guinea-pig and a rabbit gave positive results.

Although dressed rabbits had been obtained from the Washington Market and prepared in the patient's home the first week in December, 1930, she said that she had not had contact with them or with the utensils in which they were cooked. A friend who had soaked the rabbits in salt water and cooked them was entirely well.

DISCUSSION

DR. SAMUEL KAUFMAN: I have never seen a case of tularemia, except on lantern slides at a local medical society, in which some of the lesions resembled those in the case presented. Through the courtesy of Dr. Hopkins, the inoculation and agglutination tests were carried out, as stated, with positive results.

Tularemia is a systemic disorder caused Bacterium tularense. Cutaneous lesions are present in a considerable percentage of cases. The specific character of the disease in human beings was first recognized by Pearse, and the diagnosis was confirmed by Vail. The specific organism was isolated by McCoy and Chapin in 1912.

The infection is common in wild rabbits, and often follows the bites of deer flies; it is more frequent in the western and middle western states. The incubation period is from three to seven days. The onset is sudden, being accompanied by fever and severe systemic disturbances. The patients usually recover, without evident sequelae. In fatal cases, death usually ensues from two to three weeks after the date of infection, with bronchopneumonia, nephritis or peritonitis as the immediate cause.

The case presented is of the ulceroglandular type. Three other types have been described as being caused by the same infection. The lesion begins with a papule or nodule, which rapidly ulcerates at the site of the infection, usually the fingers, frequently in an abrasion or a scratch. The primary lesion is tender, firm and indolent and has a necrotic base, which when separated leaves a punched-out ulcer. The regional glands are markedly enlarged and sometimes suppurate. The treatment is symptomatic.

DR. J. GARDNER HOPKINS: Agglutination tests were done by the United States Public Health Laboratory in Washington, D. C. It was said that this was the fourth case they had had from New York State. All the other cases were traced to rabbits purchased in the market and sent from elsewhere. There is no evidence that the disease is endemic in rodents in this state.

DR. JOSEPH J. ELLER: I congratulate Dr. Kaufman in recognizing this condition. It is the first case observed in this city in our dermatologic practice that I know of. I think that from now on we should be on the watch for this disease.

In a report at a meeting of the American Medical Association in Portland, Ore., in 1929, about sixteen or seventeen cases were presented and several papers were read. I wondered then how long it would be before cases would be seen in New York. One speaker who read a paper said that "whenever you think of tularemia, think of rabbits."

INFANTILE ACNE. Presented by DR. LEWIS B. ROBINSON.

A. H., a girl, aged 19 months, had lesions that had first begun on the right cheek seven months prior to presentation and on the left cheek three weeks prior to presentation. Since the onset the patient had had recurring pustules and inflammatory papules that disappeared, leaving depressed scars.

The past history was irrelevant except for two attacks of pleurisy which had cleared up with ultraviolet light therapy. The mother had had tuberculous glands removed seven years previous to the child's illness. There were no pulmonary symptoms.

Examination showed many pinhead to split-pea sized papules and inflammatory papules over both cheeks with pinhead-sized, pitted scars. There were a few comedones on the right cheek and one or two on the left.

A culture from the pustule showed no growth on the blood plate.

Intracutaneous tuberculin tests gave negative results.

DERMATITIS VENENATA (MERCIREX OINTMENT) WITH SECONDARY STAPHYLOCOCCUS INFECTION. Presented by J. GARDNER HOPKINS.

A. C., a woman, aged 33, Greek, was admitted to the Vanderbilt Clinic on Oct. 20, 1930, with an acute vesicular eruption of the neck, face and arms of one week's duration. She had used Mercirex soap and ointment, and twenty-four hours later marked swelling of the face developed and numerous water blisters appeared on the face, neck and arms. The patient discontinued the use of the soap and ointment immediately. Four weeks later, the skin became clear except for the hands, which were erythematous, infiltrated and covered with papules. At this time a patch test of Mercirex ointment was applied. Within twenty-four hours, the patch test was positive, and a recurrence of the vesicular, erythematous eruption of the face took place. All other tests gave negative results except a patch test with 5 per cent ammoniated mercury and a delayed positive reaction to staphylotoxin.

As cultures from the hands, taken on November 4, showed numerous hemolytic staphylococci and were negative for fungi and the titration of staphylococcus antitoxin was normal, and as the patient's hands were edematous and covered with a papular and papulovesicular eruption, while the other cutaneous areas were clear, a series of injections of staphylotoxin were begun on Jan. 29, 1931. The eruption disappeared in a few weeks.

DERMATITIS ARTEFACTA. Presented by DR. GEORGE C. ANDREWS.

T. R., a German, aged 47, was admitted to the Vanderbilt Clinic in November, 1930, the chief complaint being the presence of sores at the corners of the mouth of eleven months' duration. The patient was a coffee taster and had recently come from Brazil. Eleven months previous to admission, two "open sores" had been treated by the application of radium. He stated that the sores then became deeper and healing was very slow. At recurrent intervals during the past eleven months, the sores had healed and again broken open. The patient also gave a history of roentgen treatments at a local hospital and thirty-four injections of antimony and potassium tartrate at another hospital without improvement.

When first seen, the patient showed a strip of elevated, keloidal, contracted scar running downward from each outer angle of the mouth, terminating at the lower border of the ramus in ulcerated areas on either side, that on the right being roughly oval and about the size of a dime, that on the left, oblong, about 2 by 5 cm., with sharply ulcerated margins and slight peripheral induration, with the base of the ulcer showing small, glistening, fairly healthy granulations.

Cultures showed only a small gram-positive hemolytic staphylococcus interpreted as a surface contaminant.

Biopsy showed evidences of a chronic ulcer of the skin with no suggestion of any definite etiologic factor.

On the second visit, the patient gave a definite history of digging at the ulcers. He stated that "small parasites are under the skin. I extract them with very small pincers and a magnifying mirror."

On other visits, including the last, the patient had brought in a number of short and long strands of tissue which he had pulled from the ulcerated areas.

The patient failed to keep any appointments with a neurologist, but was to have been studied from that point of view.

Treatment had consisted of cleansing the areas, bland dressings and, at times gentian violet, which the patient felt was very helpful. Healing had advanced rapidly at intervals only to be followed by a complete set-back on subsequent visits owing to obvious interference by the patient.

MULTIPLE LEIOMYOMAS. Presented by DR. A. BENSON CANNON.

T. B., an American, aged 34, a street-car conductor, came to the Vanderbilt Clinic complaining of a tender, nodular condition of the skin of five years' duration. Originally three lesions had appeared over the right side of the jaw and had increased slowly in size. Other lesions had developed since. During the past two years, the nodular lesions had appeared over the body, especially on the chest and the back. They were tender to pressure and were somewhat painful on exposure to cold. No tumors had been removed prior to admission.

Examination showed over the right side of the jaw three pea-sized, hard, dome-shaped, smooth, waxy tumors with dilated vessels about the periphery, surrounded by an inflammatory halo. Near these and in other locations on the face were pinhead-sized and slightly larger tumors of similar appearance. Scattered over the back, chest, arms and buttocks were a few firm, elastic and slightly raised, pea-sized, oval tumors attached to the overlying skin and movable on the subjacent tissue. The skin over them was pink.

At biopsy, the lesions from the left side of the forehead, the right side of the jaw and the chest showed pathologic evidence of leiomyomas.

A CASE FOR DIAGNOSIS (DERMATITIS EXFOLIATIVA?). Presented by DR. LEWIS BYRNE ROBINSON.

S. S., a Hungarian Jew, aged 54, a tailor, was admitted to the Vanderbilt Clinic on Nov. 25, 1930, with a generalized itching eruption of five years' duration and asthma of fifteen years' duration.

On examination, the scalp was found to be covered with adherent grayish scales. The skin of the entire body was erythematous and desquamating; the palms and soles were markedly hyperkeratotic. There was a marked adenopathy of the inguinal, cervical and right epitrochlear and axillary glands. Tentative diagnoses of dermatitis exfoliativa and lymphoblastoma were considered. The patient was admitted to the Presbyterian Hospital on December 29, and remained there until Jan. 16, 1931, for further study. The findings were negative; that is, skin tests, studies on the blood, sputum and urine and roentgenograms of the chest and sinuses all gave essentially normal results.

A specimen taken for biopsy from an erythematous desquamating area of the extremity showed a rather prominent granular layer and a bandlike superficial infiltration of the corium, with large polygonal cells, vesicular nuclei and also many round cells that appeared to be lymphocytes. There was a suggestion of lichen planus from certain aspects of the slide.

A section from the right axillary node showed that the germinal centers were not large. In places, the lymphoid tissue was well preserved; in other places, it seemed compressed by the proliferation of large cells, apparently derived from the reticulo-endothelial septum. In the sinuses were large pale cells with vesicular nuclei and also occasional multinucleated giant cells; sometimes the latter cells were grouped together. Scattered throughout the gland, particularly in the sinuses, were brownish-staining particles, some of which were refractive; others less so. Frequently, the particles had been engulfed by the larger elements just described.

With the iron stain, the brownish particles gave a positive reaction, and the larger cells were apparently a response to the presence of the hemosiderin. The Gram and Giemsa stains did not demonstrate the presence of bacteria. No positive diagnosis could be made. The condition was certainly not tuberculosis, Hodgkin's disease or tumor. The proliferation of the reticulo-endothelial cells was apparently a response to the deposition of hemosiderin in the gland.

The desquamation and pruritus had improved under fractional roentgen treatment and the application of a 2 per cent salicylic acid ointment.

MANHATTAN DERMATOLOGIC SOCIETY

M. B. Parounagian, M.D., *Secretary*

Regular Meeting, Feb. 10, 1931

Jerome Kingsbury, M.D., *Chairman*

Recurrent Papular Syphilid Appearing During Treatment. Presented by Dr. Isidore Rosen.

H. P., a man, aged 41, single, a waiter born in Germany, was admitted to the New York Post-Graduate Clinic on Dec. 6, 1929, with an extensive macular eruption on the trunk and the upper and lower extremities. A few papular lesions were present also on the palms. The remains of a primary lesion existed on the corona glandis. There were mucous patches on the gums, lips and right tonsil. Alopecia of the temporal region was present. The patient stated that the eruption was twelve days old at the time of presentation, and that he had been exposed three times before the appearance of the primary lesion.

The Wassermann-Kolmer reaction of the blood was four plus, the beef-heart-cholesterol-reaction four plus and the Kahn reaction three plus. From Dec. 6, 1929, to Feb. 10, 1930, the patient received ten injections of arsphenamine and 10 of bismuth, following which the Wassermann-Kolmer reaction of the blood was negative, the beef-heart-cholesterol reaction four plus with 0.05 serum and negative with 0.02 serum and the Kahn reaction two plus. From March 10 to May 19, 1930, the patient received ten injections of arsphenamine and ten of bismuth, following which the Wassermann reaction of the blood and the beef-heart-cholesterol, Kolmer and Kahn reactions were negative on July 16, 1930. From July 25, 1930, to Feb. 2, 1931, the patient received twenty injections of bismuth.

On Dec. 12, 1930, the Wassermann reaction of the blood was negative. On Dec. 19, 1930, the Wassermann reaction of the spinal fluid was negative; five cells and a faint trace of globulin were present; the colloidal gold reaction was 1233433221. On Feb. 6, 1931, the patient was reexamined and found to have a generalized macular and papulosquamous eruption on the trunk and arms and the right temporal region. A few macules were present on the left palm. Alopecia of the temporal regions and the outer half of the eyebrows was noted. On February 9, several new papules appeared on the scrotum. The Wassermann reaction of the blood taken on February 6 had not been reported. Dark-field examination of the papule on the right arm on February 9 yielded negative results.

DISCUSSION

Dr. George C. Andrews: This is an interesting and instructive case. I wonder if such a long interval of rest between courses of treatment was warranted.

Dr. George M. MacKee: I agree with the diagnosis of recurrent syphilid. The condition resembles a late secondary eruption and not an early eruption of reinfection.

DR. HOWARD FOX: I recall a case in Dr. Fordyce's service at the City Hospital: A young Negress, after a course of seven or eight injections of arsphenamine, presented a new outbreak in the form of a generalized papular syphilid.

DR. J. FRANK FRASER: At the recent International Congress of Dermatology in Copenhagen, Dr. Stokes, in collaboration with Dr. O'Leary, Dr. Cole and others, read an interesting paper relating to relapse in early syphilis and its differention from reinfection. In a study of 5,000 cases it was found that remissions were more liable to occur when treatment was begun in the seronegative stage of the disease. Brown and Pearce, experimenting on rabbits, found that when the chancre was excised, the disease ran a much more malignant course and the percentage of relapses was greater than when the treatment was delayed. The question arose whether it would not be better for the patient with early syphilis to delay all treatment until there was evidence of an acquired immunity. Another point brought out in the paper was that remissions were fewer following treatment with arsphenamine and bismuth than with arsphenamine and mercury.

DR. M. B. PAROUNAGIAN: It seems to me that there is food for thought in what Dr. Fraser related. I have had personal experience with many of these cases. In the present case I would suspect superinfection rather than recurrence. The case presented too extensive and active lesions to correspond to a recurrent syphilid.

SEBORRHEIC KERATOSES. Presented by DR. BENJAMIN OCHS.

M. Z., a woman, aged 60, had been referred to me a few days prior to presentation. Her history was that about twenty years previously lesions had developed on the back, and had then spread to the side of the abdomen. The itching, though slight, had persisted most of the time. On examination, many lesions, varying in size from that of a pinhead to that of bean, raised and verrucose, were seen. The smaller ones were nonpigmented, while the larger ones were from fawn-color to brown. The greatest number of lesions were under the breasts, but they extended from the shoulder to just below the umbilicus. The back was not so profusely affected as the abdomen. In the left groin was a large black pigmented lesion. On the brow were some larger pigmented and some smaller nonpigmented senile keratoses. The case was presented as one of seborrheic keratoses, and the question had been raised as to whether the lesions were infectious or contagious, as the patient's daughter, aged 36, had commenced, about two years previous to the patient's presentation, to show the same condition.

DISCUSSION

DR. LOUIS B. MOUNT: What the significance of the occurrence of the lesions in the daughter is, I cannot say. Whether there is a tendency toward the production of these seborrheic verrucae transmitted to the skin of the offspring is the question.

DR. JOSEPH J. ELLER: I think that this is a typical case of seborrheic keratoses.

DR. GEORGE M. MACKEE: I agree with the diagnosis. I do not think there is any reason to suppose that the condition is familial, although there may indeed be a familial tendency. One may inherit a tendency to form seborrheic keratoses early in life. I see many cases of seborrheic keratoses early in life in those who have no significant family histories.

DR. MAX SCHEER: I do not think there is any evidence of contagion or infection.

DR. BENJAMIN OCHS: What struck me as peculiar was that the woman started to have the lesions when she was 40 and the daughter started at 36, so I cannot see where heredity plays a part. I do not think that the condition is hereditary, nor do I think it is infectious. I should like suggestions as to treatment in cases like this; would roentgen treatment be the proper procedure?

KERATOSIS PALMARIS ET PLANTARIS. Presented by DR. JOSEPH J. ELLER.

The patient was a boy, 5½ years of age, from the New York Post-Graduate Skin Clinic; the general health had always been good. The marked hyperkeratotic condition of the palms and soles had begun when the child was 5 months of age and had increased since then.

DISCUSSION

DR. HOWARD FOX: In this case no other members of the family were affected. I have photographs of a mother and two daughters with lesions occurring on the feet. The question of the proportion of cases with hereditary or familial histories is of interest.

BLACK HAIRY TONGUE (LINGUA NIGRA). Presented by DR. MAX SCHEER.

M. N., a man, aged 24, presented himself at the New York Post-Graduate Hospital with a condition of the tongue which, to the best of his knowledge, had existed for three weeks. The posterior half of the tongue was black and presented a hypertrophy of the papillae, so that it gave the impression of being "hairy." The patient stated that he had not been smoking since the appearance of the lesion, but prior to that time he had smoked about twenty cigarets daily. There was no significant history relative to hot and spicy foods. Examination of the axillary hairs showed the presence of lepothrix.

DISCUSSION

DR. GEORGE M. MACKEE: Dr. Wise succeeded in curing two cases, I think, of black hairy tongue by scraping the tongue clean and then applying trichloracetic acid.

DR. HOWARD FOX: I should like to mention a case that Dr. Ochs and I saw at the Harlem Hospital, of black tongue in which the hypertrophied papillae were extremely long. According to the patient's statement they caused a tickling sensation when the tongue came in contact with the palate. On two occasions she had cut the growth with scissors.

DR. LOUIS B. MOUNT: I saw the same condition in two sisters. It had been present for a long time.

DR. JOSEPH J. ELLER: Most observers are of the opinion that the discoloration is due to ammonium or sulphur from protein débris or tobacco smoke. I had a case six weeks ago which was much more marked than this one, and the lesion disappeared in a few days after the application of salicylic acid, 20 per cent., followed by curettement.

DR. MAX SCHEER: In these cases it has been very difficult to find a definite etiologic factor. Various kinds of irritation have been blamed for the condition, among them tobacco smoke. In nearly all reports of cases there have been no subjective symptoms. In most of the cases examination for fungus gives negative results. The color is interesting. The dark brown color probably is due to excessive epithelial cornification, such as is seen in severe cases of ichthyosis. Various forms of therapy have been used, some with success, some without; also various chemical agents; but curetting the lesions is a preliminary step. The duration of the disease varies from a short time to a few weeks, months or years.

LICHEN PLANUS (UNUSUALLY SEVERE CASE). Presented by DR. M. B. PAROUNAGIAN.

R. K., a man, aged 34, had had a very extensive eruption of lichen planus involving most of the skin and the mucous membranes of the mouth, tongue and lips. This case had been presented before the Manhattan Dermatological Society in November, 1930.

At the time of the second presentation most of the lesions had disappeared and marked pigmentation had resulted; the itching had almost completely vanished.

To date he had received ten injections of mercuric salicylate and six injections of sodium thiosulphate, together with calamine lotions and other local remedies. The total duration of the disturbance had been about four and a half months.

DISCUSSION

DR. HOWARD FOX: Someone brought up the question of oral lesions in lichen planus and remarked that treatment had been unsatisfactory. I agree entirely with this. Recently I studied a series of ten cases in which the condition was confined entirely to the mouth, and I found that arsenic seemed to be of some help but was much less useful than in the treatment of cutaneous lesions. One patient painted the lesions with iodine on her own initiative and to my astonishment wrote that the eruption disappeared rapidly and had not returned at the end of five years.

DR. PAUL BECHET: Why does Dr. Parounagian use sodium thiosulphate?

DR. ANDREW GILMOUR: I think that it will take more than from five to seven weeks for the pigmentation to disappear. I think that it will take four or five months before it is entirely gone.

DR. LOUIS B. MOUNT: I think that the thing for which Dr. Parounagian is to be congratulated is in causing the lesions to disappear from the mucous membranes. That is the most difficult region in which to cure lichen planus.

DR. MAX SCHEER: In my experience mercury and bismuth are much more efficacious than arsenic. I agree with Dr. Gilmour that this pigmentation is not likely to disappear soon and that it may remain a long time. I do not think that one can attribute the disappearance of the lesions of the mucous membrane to the treatment. They may disappear without treatment and much more often persist in spite of treatment.

DR. M. B. PAROUNAGIAN: I would not have shown this case if it had not been for Dr. Wise's request. He asked me if I had had an examination of the gallbladder made. I arranged to have it done, but the patient could not get away, so it was not done. The reason I gave him injections of sodium thiosulphate was more for experimental purposes than anything else. I have tried it in several cases with very good results. This fall I have perhaps seen more lichen planus of the extensive variety than at any time for the past ten years. I do not know whether that is the experience of the other members or not. This case was very severe; the patient suffered considerably from itching. He is doing very nicely now.

MULTIPLE CHANCRES. Presented by DR. M. B. PAROUNAGIAN.

S. S., a man, aged 22, had been admitted to the Bellevue Hospital Skin Clinic on Jan. 26, 1931, on account of genital sores. (This patient had been presented before the Society in January, 1926.) He had been frequently exposed with the same woman since October, 1930. His last exposure had been on Jan. 4, 1931.

He claimed that the lesions had appeared about Jan. 12, 1931. The Wassermann reactions on January 28 and February 2 were both negative, and the dark-field examinations made on all four lesions the day before the presentation gave positive results. The lesions were located on the pubic region near the base of the penis, the coronary border on the right, the meatus, the sulcus and the right side of the frenum.

The patient stated that the meatal sore had appeared first and the others had followed, a few days apart. Another Wassermann test was made prior to presentation, and he had received treatment. The patient stated that he understood that his female companion was a patient at Bellevue Hospital. She was said to have had active secondary syphilis in May, 1930.

Eight injections of neoarsphenamine and eleven of mercuric salicylate had been administered to the patient being presented. His visits were discontinued after Aug. 29, 1930. He returned on Jan. 2, 1931, with secondary lesions on the face and body of two weeks' duration and a four plus Wassermann reaction; it was probably a superinfection.

DISCUSSION

DR. HOWARD FOX: I understood Dr. Parounagian to remark that these cases of multiple chancre represented a more serious infection. Is that his opinion?

DR. M. B. PAROUNAGIAN: Most of those present may recollect a man presented at the Academy of Medicine who had fifteen chancres, all about the genitals. Dark-field examination was made on eight; that was three or four years ago. The patient was here a couple of weeks ago with a circinate eruption of the recurrent type. The lesions appear whether he receives treatment or not.

DR. LUDWIG OULMANN: Dr. Fox has the photograph of a patient with four chancres of the chin, whom I presented here. In that case there was no increased malignity and the patient responded well to treatment without complications for years after.

DR. C. R. RHEIN (by invitation): The Kline finger blood test done on this patient showed a four plus reaction with both the diagnostic and exclusion antigens. This test was recently devised by Dr. B. S. Kline of Cleveland. It is a simple procedure which can be done in from five to seven minutes with a few drops of blood, easily obtainable from the finger. It becomes positive much earlier than the Wassermann and Kahn reactions in cases of early primary lesions, as evidenced in this patient. Dr. Eller and I have done 500 of these finger blood tests in the office and have checked them with the other standard methods. The comparison has been unusually satisfactory.

DR. M. B. PAROUNAGIAN: I presented this case on account of the multiplicity of the lesions and because of the question—brought up by Dr. Fraser—whether I would be justified in treating this man immediately or to wait until he forms a natural body defense before we start the treatment. I have had a great many cases in which I started treatment in this stage and have had many forms of recurrence. If one starts energetic treatment, first using three injections of arsphenamine, followed by mercury or bismuth, one has the best chance of curing the infection, if there is such a thing as a cure. But at this stage one is just gambling. I wanted to have the opinion of the Society on this question.

EPITHELIOMA OF THE LOWER LIP. Presented by DR. M. B. PAROUNAGIAN.

J. W., a man, aged 60, presented a lesion on the lower lip, the duration of which had been about two years. His occupation was mixing paint, and while cleaning tanks with caustic soda and steam, some of the fluid had splashed on his lower lip; ever since that time his lip had been sore.

When seen about a week prior to presentation, he presented the following appearance. The vermilion border and entire mucous membrane of the lower lip were involved; the lesion was infiltrated and crusted; the borders were irregular but not pearly and hardly indurated. There were no glandular swellings that could be palpated. He smoked moderately and chewed tobacco quite a little. The inner surface of the lip was thickened and ridged. He did not complain of pain or bleeding.

A biopsy was made but the results had not yet been reported. The Wassermann reaction was reported as negative; likewise the Kahn reaction. NOTE.—A subsequent biopsy report was squamous cell epithelioma.)

DISCUSSION

DR. M. B. PAROUNAGIAN: This case was shown because it was not a common type of epithelioma of the lip. It was superficial; there was no induration, pearly border or glandular involvement after two years' duration.

DR. J. FRANK FRASER: Carcinoma in this location is always of the squamous cell type and usually does not run a course of two years without involvement of the lymph nodes. I am not prepared to go as far as Dr. Rosen and say that the lesion is tuberculous; from the clinical appearance it suggests an inflammatory rather than a neoplastic process. In the final analysis the diagnosis must rest on the microscopic observations.

DR. ANDREW GILMOUR: Clinically, I agree that the condition is tuberculosis. I think the interesting point is what treatment to use.

DR. HOWARD FOX: I do not agree with the remark that the absence of glandular involvement rules out the diagnosis of carcinoma of the lip. One point against it being a tuberculous ulcer is that such lesions are apt to be painful and tender.

DR. GEORGE C. ANDREWS: I believe that this is an extensive keratosis of the lip. Whether or not any epithelioma is present must be decided by microscopic examination.

DR. LOUIS B. MOUNT: I feel as Dr. Andrews does. The patient has distinct and marked keratosis of the lip, plus a lesion on the inner side of the lip. Keratosis is often the forerunner of malignancy, so it would seem plausible that the lesion on the inner side of the lip is malignant.

DR. JOSEPH J. ELLER: I think that this is an epithelioma, but of course the diagnosis will have to be made by means of the microscope.

DR. PAUL BECHET: I am not so sure of the diagnosis of epithelioma; the infiltration is somewhat different, both in its appearance, and on palpation. The lesion has no definite border; it has been present a long time; the teeth are full of pus at the gum line and badly infected. With these factors in mind I would prefer to eliminate the diagnosis of an infectious granuloma before definitely calling the lesion an epithelioma. This is the type of case in which radium cross-firing with the gamma rays should be employed. I think the glands in the neck ought to receive high voltage x-rays even though they are not palpable.

DR. GEORGE M. MACKEE: I gained the impression that the lesion started as a keratosis of the lower lip and that infiltration or epithelioma occurred later. Therefore my diagnosis is epithelioma; but it is not a typical clinical epithelioma; there is not much induration and the lesion gives many evidences of being a granuloma rather than a neoplasm, as Dr. Fraser remarked. That will have to be settled by microscopic examination. Assuming that it is an epithelioma, I think that in all probability this case can be cured in any of three ways: radium properly applied, excision with the scalpel or surgical diathermy. As far as I can estimate clinically, it is a local lesion. Apparently the lymphatics have not been involved. We not infrequently see cases in which epithelioma of the lip has existed for one or even several years and, when properly destroyed, is often permanently cured.

As regards the method, I would prefer excision with the scalpel or surgical diathermy in preference to the use of radium alone. Probably the best results can be obtained with an operation followed by the local application of x-rays or radium, and, as Dr. Eller said, it might be well to apply prophylactic treatment to the neck.

DR. MAX SCHEER: I agree with those who consider the lesion epithelioma. The absence of palpable glands may mean that the glands are not involved or that they are involved and are not palpable.

DR. LUDWIG OULMANN: I regard it as an epitheliomatous condition. There are plenty of such cases in which one does not find palpable glands. But in a number of cases one sees metastatic glands form after operation or treatment, when the lesion is healed.

DR. M. B. PAROUNAGIAN: I was not inclined to the diagnosis of tuberculosis in this case. The patient is in perfect health. With tuberculosis of the mouth one usually has pulmonary tuberculosis. I am inclined to a diagnosis of epithelioma rather than tuberculosis.

SEBORRHEIC KERATOSES OF NEVOID AND VERRUCOSE TYPES. Presented by DR. M. B. PAROUNAGIAN.

D., a man, aged 61, presented numerous lesions of varying sizes, distributed on the upper portion of the chest and back. The duration of the condition was unknown, but he claimed that it had been present for many years. The lesions consisted of a number of pigmented patches of different sizes and some elevated,

greasy, brownish, keratotic patches. They did not cause much inconvenience, though he was desirous of knowing if anything could be done for them, as the lesions were too numerous for individual attention. I should like suggestions as to therapy.

DISCUSSION

DR. M. B. PAROUNAGIAN: Is there any danger of a neoplasm?

DR. HOWARD FOX: I would like to answer the presenter's question about therapy. I would unhesitatingly advise the free use of a sharp curet, followed by cauterization with a nitrate of silver stick. As Dr. Eller remarked in a recent article, these lesions are superficial and therefore easily removed. It is a simple matter to remove fifty or a hundred at a sitting if necessary. Frequently after such treatment the treated areas remain red for several months, though there should be no appreciable scarring.

DR. GEORGE M. MACKEE: I am interested in the classification of the lesions. There are three types: senile keratoses with dry adherent scales; seborrheic keratoses, darker in color with easily removed waxy scales, and nevoid keratoses which are thick, fleshy, dark and smooth with no hyperkeratosis. They are all superficial and they are only slightly dangerous. There are many of them and it is probable that not a single lesion will change to epithelioma. It is not necessary to treat them at all, but it is advisable to inspect all the lesions once a year and if one of them becomes active it should be destroyed. The lesions can be cured with a high degree of certainty with any one of several conventional methods: excision, electrodesiccation, radium or a combination of these methods. Even curettage and trichloracetic acid will cure these particular lesions.

DR. ANDREW GILMOUR: There was one lesion on the neck, dark in the center; is that one much more apt to break down than the others?

DR. JOSEPH J. ELLER: I am under the impression that all of these lesions are seborrheic keratoses. They are superficial and have greasy, friable scales. A few on the face and neck are more dry and flat. On exposed areas the difference between seborrheic and senile keratoses clinically is that the senile keratoses are much harder and more deeply embedded. When the latter are curetted they leave moist bleeding surfaces; the former are much more easily removed.

LUPUS ERYTHEMATOSUS: ROENTGEN-RAY DERMATITIS AND PSORIASIS. Presented by DR. M. B. PAROUNAGIAN.

J. S., a man, aged *22*, presented himself at the skin clinic of the Bellevue Hospital on Feb. 9, 1931. Examination at that time revealed a marked erythematous rash on the face involving the flush area, the duration being about three years. The color was bright red. There was no noticeable atrophy or scaling; a slight itching was admitted.

Examination of the body disclosed marked scarring of the right arm and an extensive disfiguring scar on the right side of the trunk. The patient stated that when he was 3 years old, he fell against an ash can and fractured his arm and some of his ribs. The patient claimed that a physician applied a hot plaster of paris cast and burned him. Examination showed the well marked pigmentation, telangiectasia and atrophy commonly met in roentgen-ray dermatitis. Later the history of frequent roentgen examinations was elicited, which probably accounted for his condition. Further examination revealed marked patches of psoriasis on the elbows and knees and also some patches on the scalp.

The patient was presented on account of having had three different diseases: (1) early stages of lupus erythematosus (seborrhea congestiva), (2) psoriasis and (3) roentgen-ray dermatitis.

DISCUSSION

DR. ANDREW GILMOUR: It is interesting to note the amount of roentgen-ray dermatitis the patient has. He simply had x-ray pictures taken, as he understood it. I suppose his skin was much more sensitive to x-rays than that of an older person.

DR. HOWARD FOX: The extensive eruption is undoubtedly a roentgen-ray dermatitis. If due to taking x-ray pictures, there must have been gross negligence or very poor technic, as this is by far the most extensive of the kind I have seen. I have a photograph of a patient with roentgen-ray dermatitis due to carelessness of an intern who left the machine running for ninety minutes while he was absent from the room. It caused a burn which required five years to heal.

DR. GEORGE C. ANDREWS: On account of the deep sclerosis present, I surmise that the x-rays employed were filtered.

DR. GEORGE M. MACKEE: I think the entire eruption is psoriasis. The distribution on the anterior hair line and the small scaly papules at the elbows certainly suggest psoriasis. While the eruption on the face has the topographical distribution of lupus erythematosis, it has not the characteristics of that disease: There are no follicular horny plugs, atrophy or telangiectasis, and the scales are not adherent. I would not expect seborrheic dermatitis to occur on the elbows. I would prefer to call the entire eruption psoriasis. The patient probably has some seborrhea of the scalp as manifested by the dandruff.

DR. M. B. PAROUNAGIAN: The patient does not remember how many pictures they took or the number of examinations made. The lesions on the elbows, knees and the scalp I thought were typical of psoriasis, but the distribution on the face in the flush area suggests lupus erythematosus in the early stages. That is why the patient is presented for discussion. We will show him again, and will treat him for psoriasis in the meantime.

ST. LOUIS DERMATOLOGICAL SOCIETY

MARTIN F. ENGMAN, JR., M.D., *Secretary*

Regular Meeting, Feb. 11, 1931

RICHARD S. WEISS, M.D., *Presiding*

HODGKIN'S DISEASE. Presented by DR. HENRY C. SHAW.

H. F., a white man, aged 30, whose family history was irrelevant, said that in 1918 there was noticed a painless swelling of the glands of the anterior cervical chain of lymph nodes. One year later a biopsy was performed and a diagnosis of Hodgkin's disease was made. At this time there was roentgen evidence of mediastinal tumors. Since then he remained under the care of his local physician.

He was first seen at the Barnard Free Skin and Cancer Hospital in June, 1930, when he complained of a large swelling in the left side of the neck, cough and a feeling of substernal oppression. The original diagnosis was confirmed by x-ray pictures and a biopsy of one of the cervical glands. The patient was placed under the care of the roentgen department and received deep roentgen therapy at intervals.

His present illness began about six weeks before this meeting, when he began to be troubled with intense generalized itching, and he was referred to the skin department three weeks ago. There were excoriations on the accessible parts of the body, and on the left shoulder the following eruption was noticed: a group of firm, reddish-purple, slightly elevated cutaneous nodules covering an area about the size of the palm. These nodular infiltrations varied in size from 2 mm. to 1 cm. The patient believed that they began at about the onset of the pruritis.

Examination showed a pallid but well developed and fairly well nourished white man who appeared chronically ill. There was an enlargement of the left cervical glands. An eruption was present, as already noted. There were classic signs of increased mediastinal pressure.

Laboratory data were as follows: Roentgenograms of the chest showed a mediastinal tumor. The urine was normal. The Wassermann and Kahn reactions of the blood were negative. Examination of the blood revealed: hemoglobin, 95 per cent; white blood cells, 6,300; red blood cells, 4,390,000, and nonprotein nitrogen, 25 mg. A biopsy on a gland in 1919 showed Hodgkin's disease, as did a biopsy on a gland in 1930. We were unable to obtain the patient's consent to a biopsy on the skin.

DISCUSSION

DR. A. H. CONRAD: I think that it is Hodgkin's disease.

DR. R. H. DAVIS: I thought it was a lymphoblastoma. I think it would be well to have a biopsy performed.

DR. W. H. MOOK: I think that this case belongs to the lymphoblastoma group. The lesions presented look more like mycosis fungoides than the lesions usually seen in Hodgkin's disease. If it were not for the diagnosis made with the microscope on glands in 1919 and in 1930, I would say that it is clinically mycosis fungoides.

A CASE FOR DIAGNOSIS. Presented by DR. HENRY C. SHAW.

H. W., a white girl, aged 12, admitted to the Barnard Free Skin and Cancer Hospital, with an irrelevant family history, had gained 25 pounds since the onset of the menses. The present illness began six months before this meeting, with nodular lesions on the left shoulder. Two months ago similar lesions appeared on the right shoulder. All enlarged slowly. The physical examination was unimportant except for obesity.

The eruption was located principally over the acromial ends of the clavicles. There was another small group at about the center of the left border of the scapula on the left side. The primary lesion was an elevated nodule, and the lesions ran together to form nodular patches over the left shoulder. In other situations they were discrete. The nodules were hard to the touch. The innermost nodule on the right shoulder was roughly oval, and running across it at right angles there was a depressed scar which looked like an incision. There were also two elevated, firm papules 3 mm. in size just above the olecranon on the right arm. The vaccination scar did not show keloid formation. The Wassermann and Kahn reactions of the blood were negative. Blood counts and stained smears were normal. The basal metabolic rate was minus 23 per cent.

Biopsies on specimens taken from the left shoulder and the right arm are not yet reported.

DISCUSSION

DR. G. V. STRYKER: The lesions look like keloids.

DR. C. W. LANE: I thought that they were keloids.

DR. M. F. ENGMAN, JR.: I thought that they were keloid patches.

DR. A. H. CONRAD: I thought that they were keloids with the exception of the atrophic appearing lesion at right angles from the center of lesion.

DR. R. S. WEISS: I thought that they were keloids. They were unusually interesting because of the probability of development in the scars of acne lesions.

DR. W. H. MOOK: The primary lesion in this case is keloid. The atrophic looking scars which run at right angles from the center of the lesions are lineae albicantes, are frequently seen on the abdomen, and are due to the tearing apart of elastic tissue in the corium by the growth of the keloid.

SYPHILIS RESEMBLING LICHEN PLANUS. Presented by DR. HENRY C. SHAW.

J. K., a man, aged 29, a Hawaiian, was admitted to the Barnard Free Skin and Cancer Hospital. The family and past histories were irrelevant. Four weeks before this meeting a sore throat developed with slight fever, and generalized muscular pains. Shortly afterward, an eruption appeared on the face which

spread over the chest, back, arms and palms, and in the popliteal fossae. About one week before presentation the patient noticed a small indurated penile ulcer.

A general physical examination gave normal results; no lymphadenopathy was seen. The eruption was generalized, being thickest on the face, the back of the neck and the seborrheic areas on the back. It was also seen in the cubital and popliteal fossae and sparsely on the rest of the trunk. It was absent from the front of the legs and back of the arms. The lesions on the face were thickly distributed, particularly about the nose and mouth, with a tendency to form circles. There were a few lesions scattered in the scalp.

The primary lesions were follicular, plain topped papules, with a tendency toward angular outlines. They varied in size from 1 to 5 mm., and some had run together to form large plaques. The color was violaceous. The soft palate and anterior pillar of the fauces showed superficial ulcers, which seemed to be typical mucous patches. The palms were covered with numerous deep seated brownish papules. The shaft of the penis was covered with numerous papules which were from 2 to 8 mm. in diameter. Back of the glans there was a clean circular ulcer, 0.5 cm. in diameter, with irregular outlines and with very little infiltration.

The Kahn reaction of the blood was four plus.

DISCUSSION

DR. W. H. MOOK: This case is curious in that the lesions on the face, chest, abdomen and palms are typical early annular and papular syphilis. The lesions on the back of the neck, back and popliteal spaces are typical lichen planus. Lichen planus rarely occurs on the palms and face, but it does occur in both of these areas. The clinical diagnosis of the lesions seen in front, that is, on the face, trunk and palms, is unquestionably syphilis, while the posterior view indicates a typical lichen planus. The patient has a primary ulceration on the neck of the penis which unquestionably makes the condition syphilis. He presents a beautiful demonstration of how syphilis may imitate another skin disease.

CHICAGO DERMATOLOGICAL SOCIETY

University Hospital, Ann Arbor, Mich., Feb. 21, 1931

MICHAEL H. EBERT, M.D., *Vice President, Presiding*

LUPUS CARCINOMA. Presented by DR. UDO J. WILE.

N. S., aged 71, a laborer, stated that the lesion began in a fight fifty years before presentation, when a Negro bit off the end of his nose. Since then the eruption had flared up each winter and subsided in the summer. About one year before presentation, following trauma, nodules formed in both cheeks, followed by fungating and ulcerating lesions over the cheeks.

Examination showed a granuloma spreading peripherally over the face, with the greatest activity at the borders, and distinct central scarring. The distal half of the nose was destroyed, leaving only a hole where the nares should be. Diascopy revealed some brownish nodules in the border. The right cheek was involved with an orange-sized, fungating tumor, which had invaded the orbit and was firmly fixed to the underlying structures. It bled easily on manipulation. The left cheek presented an ulcer of the size of a quarter of a dollar, with typically rolled and pearly borders. This lesion had been treated by coagulation and applications of radium to the base, and had healed, producing an extropion. The tumor on the right cheek had been treated with radium, but no surgical procedure had been attempted.

Biopsy showed lupus vulgaris and carcinoma.

DISCUSSION

DR. O. H. FOERSTER: This is evidently a carcinoma in lupus. Although I do not know the history of this patient, the case brings up again the usual question as to the relation of radiotherapy to lupus carcinoma. The long duration of the disorder and the fact that the patient has lived through an active period in the development of radiotherapy, probably indicate that he has had considerable radiotherapy for his lupus. There is no question but that carcinoma develops in lupus without preceding irradiation, and I think it is believed now that the incidence of carcinoma in lupus following radiotherapy is not much greater than that without such treatment.

DR. KARL G. ZWICK: Without denying in the least the contributory influence of prolonged or repeated courses of radiation on carcinogenesis in lupus vulgaris (or in its absence), I would say that one also sees carcinoma developing as a complication of lupus in patients who have never been subjected to radiation.

While I am on the subject of "lupus," I take occasion to record my impression that we see a proportionately larger number of cases of this form of cutaneous tuberculosis in Ann Arbor than in other dermatologic centers. The cases are so thoroughly studied by Dr. Wile and his associates from every angle that their presentation is like a monograph on the subject.

Permit me also to say in this connection that according to my experience the statements in the textbooks and by European dermatologists that lupus is only exceptionally seen in the United States Army need revision. In the northern states, at least, lupus vulgaris is not uncommon.

DR. UDO J. WILE: So far as we know, this case is one of spontaneous cancer in lupus. The patient, so far as I remember, had received no irradiation previous to his coming here. The history of the lupus is extremely interesting, because he tells us that about fifty years ago his nose was bitten off in a fight. Following that the lesion on the forehead developed. He has been a backwoodsman, living under good hygienic conditions. The carcinoma occurred as the result of the injury on the right side, but I think there is no history of injury on the left side. On the left side the patient had a large tumor mass, part of which was removed by electrodesiccation. The lesion is extremely malignant as shown on microscopic examination, yet the man has been with us for several months and it does not seem to be progressing. He seems to be vigorous, and I think will be on the hands of the county for some time to come. We have had two cases of lupus carcinoma, one of which developed in lupus of the leg; in that case I think there was a history of trauma.

LUPUS VULGARIS. Presented by DR. UDO J. WILE.

W. B., aged 37, a laborer, stated that his skin disorder followed trauma to the nose in 1925. Since then the eruption had gradually spread until it involved the lip and cheeks and had practically destroyed the nose.

The eruption was presented as a peripherally spreading, mildly destructive lesion, but because of the patient's color it was difficult to determine color changes in it. There was no other evidence of tuberculosis. Following treatment in 1927 with gold sodium thiosulphate, the condition became practically quiescent, but later it recurred and had been cauterized on several occasions.

A biopsy showed typical lupus vulgaris.

LUPUS VULGARIS. Presented by DR. UDO J. WILE.

D. C., aged 54, a housewife, said that her eruption began in 1920 as a small pimple about the size of a pinhead on her left cheek. Soon thereafter a similar lesion appeared beneath her right eye. The eruption was asymptomatic. One lesion was frozen in 1923, according to the patient, with no benefit. There was no history of tuberculosis or other skin disease in the family.

Examination in August, 1926, revealed two lesions. One, on the left cheek, was the size and shape of an almond, dull reddish brown and covered by a sparse scale. Surrounding this area was a very narrow, slightly atrophic, pink zone. The other lesion, below the right eye, was somewhat linear, about 2 cm. long and 1 cm. wide, and appeared to be made up of a confluence of papules. Both lesions showed typical apple jelly nodules under the diascope. Biopsy was not allowed. The patient was not seen again until Jan. 29, 1931, at which time she presented herself for the same skin condition, stating that she had received no treatment in the interim.

Examination revealed a condition essentially the same as that present on the previous examination, except that both lesions had spread slightly and the larger one showed some central scarring.

Biopsy at this time showed typical tuberculosis.

DISCUSSION

DR. J. H. MITCHELL: I am particularly struck by the fact that these cases of lupus vulgaris that Dr. Wile shows us developed in adults so late in life. I am revising my conception of the age of onset in lupus vulgaris.

DR. E. P. ZEISLER: I should like to know if anyone has had any experience with the newer dietetic treatment in lupus vulgaris, and whether Dr. Wile brought back a Finsen-Reyn lamp with which to treat these patients.

DR. UDO J. WILE: I have had no experience with the dietetic treatment for lupus vulgaris as carried out abroad. In connection with the case of this woman, however, I think her home conditions could not be improved. She lives in a small town with good living surroundings and has good food. We might try depriving her of salt and test the effect of restricting her diet, but I doubt its effect. In the cases seen abroad I was impressed with the fact that the patients that improved on the salt-free diet had the destructive type of lesion and not the dry type that this woman has. I think the interesting thing about this case is that it represents a reversal of the old belief that lupus starts in childhood. The patient is now 67 and has had the disorder only five years. I have seen her only twice and have no knowledge of other evidences of tuberculosis.

I agree with Dr. Zwick that we do find an unusual number of cases of lupus in Ann Arbor, and yet I do not think the percentage of tuberculosis in Michigan is any higher than elsewhere in the country. Perhaps it is lower. Just why we see more of these cases I do not know. I am sure my colleagues in Detroit see a great many, but the majority of our cases have been drawn from the outlying districts. We have a number of Scandinavians in the outlying parts of the state who contribute many of these cases, and I am impressed with the large percentage of cases compared with the moderate size of our material.

DR. KARL G. ZWICK: The tuberculous patient who selects certain resorts in Switzerland and elsewhere in Europe for the treatment of his condition is considered a health hazard for the indigenous population. Strict regulations provide protection. It might be important to see where the patients came from whom we examined today.

TUBERCULOSIS. Presented by DR. UDO J. WILE.

L. H., aged 30, a farmer, three years before presentation noticed that his right ear was swollen, bluish red, painless and not hot. He had never had frostbitten ears. Since that time a similar condition had appeared on both cheeks. The lesions were asymptomatic.

Examination revealed a nasal obstruction, and he stated that there had been some discharge for five or six years. There was a painless swelling of the soft tissue overlying the proximal phalanx of the left middle finger. He said that an aunt had died of tuberculosis, but there was no history of contact.

Examination on Jan. 7, 1931, revealed an eruption confined to both ears and cheeks, the left side being principally involved. Here the eruption was made up of

rather brawny induration. All of the lesions were a bright purplish red. Diascopy revealed apple-jelly-like nodules in the ears, but they could not be demonstrated in the lesions of the cheeks. There was a generalized lymphadenitis.

A roentgenogram of the lungs showed an old healed tuberculous infection. A roentgenogram of the hand revealed a picture consistent with an atypical tuberculous dactylitis or a low grade, chronic infection.

Biopsy of the ear showed lupus with conglomerate epithelioid tubercles. A biopsy of the nasal growth showed a mass of miliary tubercles.

DISCUSSION

DR. CLARK W. FINNERUD: I think that the eruption should be considered as the pernio type of the disorder. Whereas in the nodule from the ear there is a typical lupus vulgaris picture of the diffuse type histologically, I think that if a section were taken from the hand it would be more like sarcoid. In one case we examined several nodules of the hand, and without exception found only sarcoid structure in this location.

DR. MICHAEL H. EBERT: Personally, I rather agree with Dr. Finnerud that this is the type of case that has been described in foreign literature, with changes in the bones, shadows in the lungs, lymphadenopathy and the peculiar bluish lesions on the cheeks and at times on the hands. There has been some discussion as to whether these lesions are really tuberculous or whether they are of some other origin. I wonder whether the tuberculin test has been performed in this case.

DR. UDO J. WILE: We purposely labeled this case tuberculosis, because we believed it to be this condition, and avoided giving the name of sarcoid because the section we had did not conform to that diagnosis. I think the nodule on the face resembles those in many of the cases we saw in Copenhagen that were labeled sarcoid. The diffuse infiltration of the ear is a condition that I have not seen before. Not only the single nodule but both ears were involved in what might be termed a massive tuberculoma, invading, I think, the deeper structures of the ear as well as the skin. I believe many of the cases have a mixed picture, of a tuberculous lesion in one portion and of another type of lesion in another portion. This man was sent into the department of medicine first, and we were asked to see him in consultation. He was then sent to his home in Cadillac, and there he has improved considerably under ultraviolet light therapy administered by his family physician.

DR. G. H. BELOTE: This patient also had a granulomatous mass in the nose, and that indicates a conglomeration of tubercles.

GRANULOMA FUNGOIDES. Presented by DR. UDO J. WILE.

J. K., aged 38, a laborer, stated that his eruption began fourteen months before presentation, as a pea-sized, bluish nodule in the center of the back at the mid-dorsal level. This lesion had grown rather rapidly, and several smaller ones had appeared surrounding the original one. There was also one small lesion on the abdomen. There was no history of previous pruritic dermatosis.

Examination at the time of entrance, in November, 1929, revealed an oval tumor approximately 6 by 4 inches (15.24 by 10.16 cm.) in the midline of the back in the dorsal region, the long axis being in the direction of the long axis of the body. This tumor was distinctly nodular and appeared to be composed of a half dozen plum-sized nodules. In general, the surface was fairly flat and was bluish brown. Near the large tumor were several smaller lesions, ranging in size from that of a quarter to that of a silver dollar, some of which were definitely elevated above the surface of the skin, and presented a somewhat mamillated appearance. A few of the smaller lesions presented themselves as slightly infiltrated plaques, associated with some scaling, and they were of a yellowish-red hue rather than the bluish-brown of the original lesion. The axillary glands were enlarged, but there was no generalized lymphadenitis. The spleen was not palpable.

Roentgenograms of the chest showed only accentuation of the peribronchial markings. Complete studies of the blood by Dr. Isaacs revealed a decrease in platelets and abnormal morphology of the monocytes, which he interpreted as "definite involvement of the lymphoid tissue."

The patient received three doses of roentgenotherapy in December, and the lesions responded very rapidly. He was discharged on January 1, and was requested to return on February 15. Results of biopsy were presented.

DISCUSSION

DR. OLIVER S. ORMSBY: With the histologic and clinical picture in front of us, I should not hesitate to accept the diagnosis of mycosis fungoides, but there are one or two reservations that might be mentioned. First, it is not at all common for mycosis fungoides to present such solid nodules. While nodules occur in mycosis fungoides, they are commonly less indurated than in this case. Again, the well defined tumor with no other cutaneous symptoms speaks for sarcoma, yet on the other hand, mycosis fungoides d'emblée may present such a picture. While it is sometimes difficult to distinguish between an unusual sarcoma and mycosis fungoides, and the present case illustrates this fact, it should be concluded that this patient has mycosis fungoides.

DR. G. H. BELOTE: There were lesions in this case which disappeared under roentgenotherapy that were entirely different from the lesions the patient now presents. When he was first seen, scattered around the large tumor were small oval lesions and slightly infiltrated, yellowish-red plaques of the type commonly seen with parapsoriasis. It is unfortunate that those lesions have disappeared, for I think they were inconsistent with sarcoma. As the case now stands, I think the diagnosis of sarcoma might well be entertained. As a matter of fact, that diagnosis was thought of when the patient was first seen, and I think the condition might well have been considered sarcoma if it were not for the other lesions and the microscopic changes.

DR. UDO J. WILE: This case reminds me strongly that departures from the usual pictures are what make diagnosis difficult. Many years ago Dr. Senear described a case of mycosis fungoides in this clinic that was limited to one foot and one leg. This case gave us at first the very thought Dr. Ormsby has mentioned. When the man was first seen, sarcoma flashed into my mind immediately, and had I not seen the large red plaque on the buttock, which is typical of mycosis fungoides, I should not have considered that diagnosis at all. Another point in regard to the large nodule was that, even when extremely large, it was freely movable on the underlying tissue; it was not bound down to the muscularis at any time. We were also puzzled in regard to the history of the previous pruritus. Through an interpreter we learned that many many years previously the patient had had a good deal of pruritus, prior to the development of the lesions.

A CASE FOR DIAGNOSIS (NEVUS ?). Presented by DR. UDO J. WILE.

C. D. B., aged 33, a farmer, was referred from the medical ward with a history of hypernephroma which was removed one year before presentation. At the time of admission to the hospital there was a question of metastases to the thyroid gland. He was sent to the department of dermatology because of an eruption on the shoulders, back and sacrum. According to the patient, these lesions had been present since early childhood. They were entirely asymptomatic.

Examination on Feb. 26, 1931, revealed a typical papulopustular iododerma over the upper part of the back, the result of the administration of compound solution of iodine in the medical ward. In addition, there were lesions of a different character scattered over the back, the right deltoid region and the sacrum. These apparently were composed of several lesions varying in size from that of a glass-headed pin to that of a quarter of a dollar, some of which had become confluent. They were presented as dusky, reddish-brown papules. The smaller

ones were dome-shaped, the larger ones flat-topped. The lesions were deeply seated and painless to pressure, and there was no associated erythema. The lesions over the deltoid region were somewhat similar in appearance to those over the sacrum, but the confluent papules did not form as large a plaque and there was a decided pinkish hue to the eruption. The patient had undergone a laminectomy three days before for intractable pain in the region of the right kidney.

Studies of the blood showed mild compensatory polycythemia. A roentgenogram of the chest showed metastases to the right lung and a slight prominence of the aortic knob. Biopsy had been performed, and a slide was presented.

DISCUSSION

DR. KARL G. ZWICK: Some of the lesions, at least, I diagnosed as fibromata mollusca. I mention them only because their distribution in this patient lends support to the hypothesis of Recklinghausen that their development is stimulated by irritation. The lesions are most numerous in the region of the shoulder-girdle, i. e., in a location where the weight of the clothing and the tension of the suspenders may cause considerable irritation. It would be interesting to investigate whether the fibromas develop in the locations coinciding with the borders of the metameric zones, that is to say, where two zones meet. I am under the impression that there are some café au lait-colored lesions present.

DR. CLARK W. FINNERUD: I believe there was one type of lesion that Dr. Zwick did not see—those over the lateral surface of the arm and around the lumbar region. He spoke of the soft, pedunculated fibromatas around the neck and shoulders. There were also these other patches of eruption which, although I could not be sure from the sections, I thought could be explained as fibrous nevi.

DR. OLIVER S. ORMSBY: I was unable to find any pigmentation to conform with Recklinghausen's disease and so had to conclude that the patient had nevi of different types.

DR. KARL G. ZWICK: I think that we all agree, because in accepting for this case Recklinghausen's familiar hypothesis that the fibroma molluscum develops from an anlage my diagnosis characterizes the fibroma as a tardy nevus.

DR. G. H. BELOTE: I think this case is interesting from a standpoint of the supposedly differentiating stain. This enormously swollen tissue takes the muscle stain; it does not take the stain of the fibrous tissue, and yet I believe it is fibrous tissue. If it is, some change has taken place to make it take this unusual stain. We know that collagen that has degenerated does sometimes take a stain of this sort, but while it takes the muscle stain it is a collagen. I think the case should be placed in the nevus class, as Dr. Finnerud and Dr. Ormsby suggested.

EPIDERMOLYSIS BULLOSA. Presented by DR. UDO J. WILE.

R. L., a school boy, aged 8 years, presented an eruption that had been present since birth, at which time he had blisters between the toes and fingers. The condition soon extended over the entire body.

Examination on May 31, 1930, revealed a more or less generalized eruption consisting of an underlying bright erythema, superimposed on which there were vesicles and bullae ranging from 3 or 4 mm. to 4 cm. in diameter. They were flaccid and covered by a thin membrane, and most of them contained a clear fluid, although some were purulent and sanguineous. Some had involuted, leaving a serosanguineous crust, whereas small atrophic scars remained as a result of older lesions. The bullae were surrounded by a narrow zone of erythema. Nikolsky's sign was positive. There were no lesions of the mucous membrane. There was a generalized lymphadenitis.

Studies of the blood showed moderate leukocytosis and mild secondary anemia. The nonprotein nitrogen was 41.6 mg. and the uric acid was 5.6 mg. per hundred

cubic centimeters of blood. A roentgenogram of the chest showed an accentuation of both hilar shadows, which was suggestive of a nontuberculous infection, as well as an enlarged thymus. Pels' phytopharmacologic test gave a reading of 54 per cent.

The patient remained in the dermatologic service until Nov. 19, 1930, and, with the exception of intermittent periods of marked improvement of the lesions together with definite physical improvement, he was discharged with little if any improvement in the dermatologic condition. Treatment had consisted of the Davis therapy for pemphigus, autohemic therapy, tryparsamide, sodium arsenite and a blood coagulating preparation, ultra-violet light, gold and sodium thiosulphate, in addition to local treatment, with the removal of all possible foci.

A biopsy has been performed, and a slide was presented.

DISCUSSION

DR. J. H. MITCHELL: I had the opportunity of seeing this case in October, and at the November meeting of the Chicago Dermatological Society, Dr. Nomland and I presented three children in one family. One of the children had nits in the hair, and Dr. Michelson took exception to the diagnosis, stating that if the patients were cleaned up and treated for impetigo the lesions would disappear. The interesting thing was that the history ran through the father's side of the family; he had a number of brothers and sisters all of whom had the disease. The condition the children had at that time, while not quite as severe as in this case, resembled it to some degree.

DR. W. H. GUY: Histologically, epidermolysis bullosa is usually attributed to a lack of elastic tissue in the skin. If sections are examined from the skin of children, one is impressed by the fact that there is a smaller amount of elastic tissue in the upper corium than is normal in adults, and one is likely to be misled. My impression is that many of these cases develop as the result of a polyglandular syndrome. Patients lose their hair at about the end of the first year, the disorder persisting until puberty, when some spontaneous improvement occurs in a certain percentage of cases.

DR. G. H. BELOTE: I wish to call attention to the Pels reading, which is 68, indicating a toxic condition. When the patient was sent to the hospital there were two cases of bullous eruption in the ward, and one patient has since died of pemphigus. In justice to Dr. Pels, I think we should admit that the serums may have been changed in transit. We are sending some more serums to see if toxicity will again occur.

DR. UDO J. WILE: I am inclined to agree with Dr. Guy that the lack of elastic tissue does not explain altogether the bullous reaction in these cases, and wish to call attention to the fact that the lesions are not limited to points of trauma. Ordinarily, one finds a great deal more atrophy of the fingers and toes in cases of this kind than we have found in this patient. When I first saw this boy I entertained the diagnosis of a severe case of Duhring's disease or pemphigus in a child. It was only after having him under observation for a year that we came to the conclusion that the case is of epidermolysis bullosa rather than pemphigus; but, as Dr. Belote has said, the Pels reading indicated toxicity of the blood. I am inclined to think that even if we get this reading again I should not regard it as against the diagnosis or as in any way against the specificity of the Pels test for pemphigus, for I do not believe it is so specific that it can be considered as of pathognomonic value.

NOTE.—Since this case was presented we have had a second toxic reading on the blood serum from Dr. Pels.

A CASE FOR DIAGNOSIS (ERYTHRODERMA?). Presented by DR. UDO J. WILE.

O. R. W., aged 56, a woodworker, stated that his eruption began one year before presentation as small pimples on both legs, and was at first mildly pruritic.

The eruption gradually became generalized, and the pruritus increased in severity. Lesions on the neck and back had appeared during the month before presentation. Treatment prior to admission had consisted of roentgenotherapy, ultraviolet light and local ointments.

Examination on Feb. 17, 1931, revealed a generalized eruption, which had a predilection for the forearms, flanks, thighs, legs and back of the neck. The eruption was made up of confluent bright red patches, superimposed on which there was a grayish-white scaling. Some of the lesions felt firm and infiltrated. The smaller patches appeared to be chiefly follicular. The eruption was symmetrical, and the intervening skin was normal in appearance. There was no generalized lymphadenitis. The liver and spleen were not palpable. Studies of the blood showed a mild eosinophilia. Biopsy had not been performed.

DISCUSSION

DR. OLIVER S. ORMSBY: It is like carrying coals to Newcastle to discuss this case when it is not labeled lymphoblastoma, but I think that is where it will land. We had a case in which the lesions were almost identical with these. Our patient, however, had minor changes in the blood that were fairly characteristic and also marked general adenopathy, so that there was no question as to the diagnosis. We had to consider a possible diagnosis of pityriasis rubra pilaris, but we found few symptoms of that disorder on careful examination. There is some involvement of the scalp in the present case but not the seborrheic symptoms that we expect in Devergie's disease, and the same is true of the face. The palms and soles are not hyperkeratotic, nor are there the follicular keratotic papules that one should find. I think that this case resembles Sequeira's cases of lymphoblastic erythrodermia. I believe that with what we have seen before there is no reason why the cutaneous lesions should not precede the changes in the blood, and I think eventually this case will prove to be erythrodermia of the lymphoblastoma type.

DR. R. C. JAMIESON: This patient was under my care until two or three weeks ago, when I lost track of him. I was pleased to see him here for diagnosis. He was seen first two months before presentation, with a very different condition from that now present. The lesions at that time were small, discrete and confluent plaques, more of the toxic type. They did not conform to any type of papular lesions, but were of the maculopapular type, chiefly grouped on the forearms, some as high as the shoulder, some around the lower portion of the legs and some on the thighs. The patient is a woodworker, and I made patch tests with sawdust of the various types of wood that he used, but got practically no result. Physical examination gave negative results. The patient gave a history of having had the same type of lesions some months before and of improving markedly following the removal of most of his teeth. As he had two teeth left, I thought they might be responsible for the condition, but their removal brought no result. He was given roentgenotherapy over certain areas, which gave some relief, although it was only transitory. The picture now is so different that one might think the case is of a different disease. During the former time he had none of the large, erythematous plaques that he has at present. The only way I could account for the eruption, the distribution and the type of lesions would be either by an external irritant, or by a widespread distribution from some focus of infection.

DR. E. P. ZEISLER: Has an arsenic test been made on the skin? The case impressed me as possibly being a chronic arsenical dermatitis.

DR. UDO J. WILE: I am pleased to hear the discussion of this case from the standpoint Dr. Ormsby suggested, that it might very well fall into the class of erythrodermia that eventually will become a lymphoblastoma. We have seen that condition so commonly here that it seems to me the most likely possibility. On the other hand, there are a few points in connection with the case that suggest a modified Devergie's disease, namely, the areas of freedom from involve-

ment, the marked symmetry of the eruption and the relative absence of pruritus. I do not think we have the whole story of this case yet, and time will give the definite diagnosis. There is no history of the man's having taken any arsenic or arsphenamine, and we have made no tests for these substances.

DR. E. P. ZEISLER: I had an almost identical case in a farmer from Wisconsin who gave a history of spraying trees with paris green, following which a very definite arsenical dermatitis developed.

HANSEN'S DISEASE. Presented by DR. UDO J. WILE.

A Chinese waiter, aged 37, had lived in America for about twenty years, except during the years from 1923 to 1925, when he returned to China. He first noted the eruption on his neck one year before presentation, and it had gradually increased. In addition to the original lesion, several smaller ones near the outer left canthus, on the forehead and on the right thigh had appeared. The largest lesion involved the neck and the right side of the face as far up as the zygoma, across the vermilion border of the lower lip and down the opposite side of the neck. There was obvious peripheral activity, and the central part of the lesion had assumed an almost morphea-like appearance. The central portions of all lesions were anesthetic and the borders hypersensitive. The ulnar nerves were mildly enlarged.

Biopsy showed a chronic, infectious granuloma with large Langhan's giant cells. No bacilli had been demonstrated in nasal smears or in biopsy material. The Kahn reaction was 4 plus.

DISCUSSION

DR. HARTHER L. KEIM: I can add nothing to the description, but it is always interesting to see a case of spedalskhed, and I agree that clinically the present case is the maculo-anesthetic type of that disease.

DR. UDO J. WILE: This case was one that brought us into an argumentative frame of mind with our pathologic department, and that department has been asking for an expression of opinion from this organization. It is a case of history repeating itself, for in 1923, when the American Dermatological Association met here, we had a Maltese boy who was covered with maculo-anesthetic leprosy. We could find absolutely no bacilli. That was not surprising to us as clinicians, but the pathologists refused to accept the diagnosis of leprosy. The association went on record that it was a very definite case of leprosy. This case to my mind is perfectly characteristic of leprosy, and yet those of you who saw the biopsy specimen full of giant cells, which are not unusual in leprosy but which the pathologist says are unusual in his experience, may understand why the pathologists lean toward the diagnosis of lupus. I took the pathologist to see the patient and said, "Here is the anesthetic lesion," and he asked if it could not be anesthetic from the lupus if the nerve was involved by the lupus. I told him that I supposed it could, but the case was one of leprosy. The pathologic department wishes us to give a definite opinion. We removed one nodule from the eye. There are no lesions on the mucous membranes nor on the posterior nares, but we feel certain that the condition is unquestionably leprosy.

DR. J. H. MITCHELL: Some of the Chicago members may remember a Chinese boy I presented about five years ago who had lesions involving the entire cheek, the left side of the chin and nose down to the ramus of the jaw. When I saw this patient I was immediately struck by the appearance of the lesions, and in the former case the results of the biopsy were similar. I failed to find bacilli in the nasal secretion. I had the patient under observation for some time. He was treated with chaulmoogra esters, which produced marked involution of the lesions. He then returned to China.

DR. A. W. STILLIANS: This question came up at an annual meeting some years ago when I presented a patient with lesions of the right forearm, with involvement of the nerve and no other lesions on the body. That case also was negative for

bacilli. Dr. Pusey stated that the diagnosis was uncertain unless bacilli were found, but I was supported by Dr. Menage of New Orleans, who had had great experience, in the belief that the diagnosis often has to be made without the finding of bacilli.

DR. OLIVER S. ORMSBY: In the maculo-anesthetic type of this disease we do not expect to find bacilli in the skin, as they are located in the nerves. They are found occasionally in the skin, but not as a rule. I think that the pathologists are not familiar with the findings in leprosy or they would not expect to find bacilli in this type of the disease.

There is a complication in this case, however, in that there is a mixture of lesions. There are some nodules, and our experience is that these usually show numerous bacilli. The absence of bacilli in this case may be accounted for through an allergic state of the skin. There is no question about the diagnosis.

DR. O. H. FOERSTER: I can add nothing to the discussion except confirmation of the diagnosis of leprosy. As to demonstration of bacilli, if the patient has sharp elevations of temperature I should suggest that biopsies of involved and uninvolved skin be made as the temperature begins to rise.

DR. CLARK W. FINNERUD: Dr. Oliver and I reported a similar case in which we could not find the organisms. We had a hard time getting rid of the patient, for the authorities did not wish to accept him for Carville, but we finally convinced them that there may be cases of leprosy of this sort in which one is not able to demonstrate the bacilli. When the report of that case was published, it was noticed by Klingmüller in Kiel, who asked for some tissue, stating that he has a special technic by which he demonstrates the presence of the organisms in these instances.

DR. G. H. BELOTE: I may add that the tuberculin tests in this case (avian, bovine and human) have all given negative results. The patient's serology is positive. He may have syphilis, or the disease may have brought about this reaction.

DR. M. H. EBERT: I have read that the Kahn test is less likely to give a positive reaction in these cases than the Wassermann test. Will Dr. Kahn please explain this to us?

DR. R. L. KAHN: An opportunity was afforded to study the specificity of the Kahn test in the presence of leprosy at the Serological Conference of the League of Nations Health Committee held at Montevideo, September, 1930. We had thirty samples of blood from patients with this disease, and the Kahn test gave ten positive reactions in this group as against seventeen given by Wassermann tests. In addition, after the conference the blood of sixty patients with this disease was examined with the Kahn test and with the Sordelli-Wassermann method at the National Bacteriological Institute at Buenos Aires. The percentage of positive reactions in this group was much lower, the Kahn test giving eight positive results, and the Wassermann test fifteen, if one excludes weak reactions given by this method. Workers in China, India, the Philippines and South America who have studied the specificity of the Kahn test in leprosy report that the results of the test are not markedly affected by this disease. Until further studies establish the degree of specificity of this test in the presence of leprosy, however, a positive reaction should be interpreted with due conservatism.

DR. F. E. SENEAR: In an article which, as I recollect it, was by Kolmer, the author combatted the idea that leprosy could give a positive Wassermann reaction, and stated that if the Wassermann test, if carefully made, proved positive in a leper it was an indication of syphilis.

LINEAR NEVUS. Presented by DR. UDO J. WILE.

J. D. L., aged 18, a student, said that he first noticed a lesion over the skin of the left breast and the inner aspect of the left arm about three years before presentation. The lesion had increased somewhat in size, but aside from an

occasional dull aching pain in this region it had produced no symptoms. He had received no treatment prior to examination in Dr. Wile's clinic, but he stated that a bone tumor had been removed from the left humerus two years before.

Examination revealed a linear lesion extending from a point midway between the sternum and left nipple upward and over the inner aspect of the arm, stopping just short of the elbow. The lesion was about 1.5 cm. wide and practically continuous in its entire length. There was slight atrophy, with waxy appearing nodules the size of a small glass pinhead throughout. In addition, there were numerous follicular plugs which with pressure could be ejected. A biopsy slide was presented.

DISCUSSION

Dr. Lester Wieder: The principal change in this patient's skin is perifollicular atrophy. I should suggest that this change might be accounted for by pressure in the brachial plexus or the cervical sympathetic plexus. The anterior changes occur along the line of one nerve trunk.

Prurigo Nodularis. Presented by Dr. Udo J. Wile.

Mrs. G. S., aged 49, a housewife, said she had been troubled by generalized pruritus for sixteen years before presentation. She did not think that it was worse in any particular region, nor that there was a marked seasonal variation. She believed that the papular lesions did not appear until after she excoriated the skin as a result of the pruritus.

Examination revealed two types of lesions. Over the trunk particularly, and to a lesser extent on the extremities, there were excoriated points that had the appearance of neurotic excoriations. Over the extremities there were pinkish papules and nodules, which varied in size from that of a pea to that of a cherry. The larger lesions over the legs were slightly verrucose on the surface and somewhat grayish. More recently one of the large nodules had ulcerated, it was suspected as the result of trauma and secondary infection.

The blood and urine were normal. Pelvic examination gave negative results, but the patient had hypertension, constipation and moderate obesity. Results of a biopsy were presented.

DISCUSSION

Dr. E. P. Zeisler: I am discussing this case because my father's name was associated with prurigo nodularis about twenty years ago. This case is absolutely identical with the one then reported and with some other cases. In all the cases the lesions have been chiefly on the lower extremities and have been extremely resistant to treatment. I think everyone will agree that the condition is very different from lichen planus hypertrophicus or from neurodermatitis. I consider this disease to be a distinct clinical entity.

Dr. Oliver S. Ormsby: I wish to defend the diagnosis because it has been only about three years since the French stated that there is no such disorder. It happened that I worked with the patient in the first case reported under the title of prurigo nodularis. The clinical symptoms were identical with those of the patient presented here. In the years intervening between these two cases there has been a good deal of confusion, and a number of people have had a wrong impression. If you recall what you saw this morning you will have a clear idea of the disorder, as this case is classic. The disease is characterized by well defined, intensely pruritic verrucose nodules, and lasts indefinitely. It cannot be cleared up by ordinary treatment, and even when the lesions are removed surgically they sometimes recur. The histology resembles that of prurigo of Hebra. Some French investigators class prurigo nodularis with neurodermatitis of Brocq. If we accept Brocq's description of neurodermatitis, we cannot admit prurigo nodularis in that category. It is a definite entity and has a characteristic symptomatology and histology.

DR. M. H. EBERT: In connection with the possible etiology, I think it is interesting in the case presented to note that the patient has been subject to what she calls "hives." She had some attacks several years ago, and she has a marked dermographism.

DR. O. H. FOERSTER: In this patient the lesions are more limited than usual in their distribution, being confined to the legs. In most instances of this unusual disorder, lesions are present on the back and on the forearms as well, with the characteristic features equally developed in these locations. All instances of prurigo nodularis that I have seen have been in women.

DR. H. J. PARKHURST: I have had two cases in the last nine years that I considered typical prurigo nodularis, both in men.

DR. J. H. MITCHELL: A number of years ago Dr. Ormsby and I saw a man with perhaps half a dozen lesions on the thighs, which were intensely pruritic and had the appearance of the lesions in this case. We never came definitely to a conclusion, but prurigo nodularis was the only diagnosis we could make in the case.

A CASE FOR DIAGNOSIS (PERNIO?). Presented by DR. UDO J. WILE.

R. F., a woman, aged 33, had no definite history of frostbite. She stated that she first noted cyanosis of the extremities, particularly of the legs, about six years before presentation. It then disappeared, and recurred only five months before presentation. The patient's symptoms consisted of marked burning when she entered a warm room.

Examination showed a marked acrocyanosis, particularly of the lower portion of the legs and of the feet, but no distinct infiltrations. Elevation of the extremity produced considerable blanching but left numerous brownish-blue macules, especially over the sides of the feet and apparently in the course of superficial veins.

Biopsy was not available.

ACROCYANOSIS (PERNIO?). Presented by DR. UDO J. WILE.

L. H., aged 14, a school girl, complained of blueness and coldness of the extremities, of about three years' duration. This was accompanied by pruritis and pain, particularly in cold weather.

Examination showed a marked acrocyanosis and coldness of the extremities. In addition, there were several half-palm sized, diffuse, bluish, somewhat infiltrated plaques in the region of the ankles. Biopsy was not available.

DISCUSSION

DR. F. E. SENEAR: I think that these two cases are an interesting pair, presenting some unusual features. In the first place, one patient showed a distinct network formation such as we see in livido racemosa, and the other patient presented marked differences in temperature. Just above the ankles the skin was of normal warmth and then suddenly became cold, and the coldness persisted down to the toes although there were no lesions on the feet. I think it was unusual in both cases that there was no involvement of the toes or feet, the disorder being limited to the ankle. I wonder whether that was not influenced by women's dress, about which the English authors have written; the sheer stockings and short skirts are considered responsible for the peculiar distribution of the disorder in these cases.

DR. M. H. EBERT: I think that the one case in which there was a livid network corresponded with the cases I described some time ago as livido reticularis. It is a disturbance of the circulation that gives the livid network. I think that histologic examination would show definite changes, particularly in the veins of the underlying tissue, both intravascular and perivascular infiltrate.

A Case For Diagnosis. Presented by Dr. Udo J. Wile.

B. O., aged 15, a school girl, stated that her eruption began in August, 1930, about one month after a tonsillectomy. It appeared as small, pinkish papules over the thighs, which soon spread to the abdomen, back, arms and legs. Some of the older lesions had disappeared spontaneously, leaving brownish-black pigmentation. There was no history of medication.

Examination on Feb. 16, 1931, showed a more or less generalized eruption, which spared the face, palms and soles. The individual lesions were follicular, keratotic papules the size of a small pinhead, which had arranged themselves in groups ranging in size from that of a quarter to that of a half dollar. The more recent lesions were yellowish brown, while the older ones and those in process of disappearing were darkly pigmented. The axillary and inguinal glands were slightly enlarged. The Kahn test had given repeatedly negative results.

A roentgenogram of the chest revealed nothing abnormal. A biopsy slide was presented.

DISCUSSION

Dr. A. W. Stillians: I thought this was a case of papulonecrotic tuberculid on the legs, which had healed, and of lichen scrofulosorum on the abdomen.

Dr. Karl G. Zwick: Subsequently to a dissemination of hemolytic streptococci one sees occasionally a diffusely scattered eruption of erythematous skin lesions terminating in a macular pigmentation due to hemosiderin. In this case the eruption seems to have followed the removal of the patient's infected tonsils, an operation that may have led to a hematogenous dissemination of streptococci.

Dr. Oliver S. Ormsby: Both of these suggestions are excellent, and I do not believe they can be controverted. I wish to make a statement regarding the keratotic lesions that occur on the skin in various conditions. In lichen spinulosis there are patches of minute follicular papules, each having a projecting horny spine. This disorder was originally described by Crocker.

Similar lesions occur as a type of trichophytid in persons whose skin is allergic to trichophyton infection. They occur on the trunk in association with folliculitis decalvans of the scalp, also occasionally in lichen planus and finally in certain drug intoxications. In the present case, the tonsillectomy preceded the lesions by a month, which should eliminate the likelihood of a toxemia from this source. While the histology of the lesions was not characteristic of tuberculosis, it is possible that that disease furnished the toxic factor producing the lesions.

Dr. G. H. Belote: This girl has also responded negatively to avian, bovine and human tuberculin. We have tried to put the condition in the class of lichen scrofulosorum, but feel that the latter ordinarily is one of the true tuberculids and, if so, it should give a positive reaction to one of these tests. The pigment in color is like that which we find commonly in connection with certain drugs, particularly phenolphthalein. We administered phenolphthalein in an attempt to produce lesions. I do not know that the fine follicular lesions seen in the present case ever occur in connection with phenolphthalein, but the pigment might be something similar to that produced by this drug. I should like very much to give a definite diagnosis, but am not able to do so at present.

Dr. Harther L. Keim: I wish to call attention to the peculiar distribution of pigment on the right arm. This is a linear arrangement of the pigment, such as frequently follows rows of lichen planus papules. I think an involuting lichen planus might explain the pigmentary change.

Dr. J. H. Mitchell: I discussed recently at one of the Chicago meetings the fact that phenolphthalein may cause the lesions of lichen spinulosis. The lesions reported were typical of lichen spinulosis, but I proved them to be due to phenolphthalein. They reacted very sharply on three different occasions.

SYPHILIS (SECONDARY). Presented by DR. UDO J. WILE.

J. McM., aged 19, a waitress, was presented for comparison of her condition with the grouped follicular eruption shown by the preceding patient (B. O., aged 15). The history was one of promiscuity over a period of four years. There was no definite history of a primary lesion, but an eruption of some months' duration was present over the hands and forearm.

Examination revealed a well nourished girl, apparently in good health, who presented a polymorphous eruption. Over the hands, forearms and around the axillae and neck it consisted of papules varying in size to that of a pea, which were fairly characteristic of the usual type of papular secondary syphilis. Over the back, the flanks, and to a lesser extent the arms, the eruption consisted of groups of fine, follicular papules ranging in size from that of a dime to that of a quarter, which were yellowish brown and slightly keratotic. The spleen was markedly enlarged. The Kahn reaction was 4 plus.

MELANOMA. Presented by DR. UDO J. WILE.

Mrs. V. R., aged 65, first noticed a few small growths on the toes of her left foot about twenty-eight months before presentation. The growths were removed, but they recurred and continued to enlarge and spread. Multiple purple nodules had appeared on the skin of the left leg during the six months previous to presentation. Aside from some pain when walking, the lesions were entirely asymptomatic. There had been some loss of weight.

Examination in this clinic in October, 1930, revealed a process that involved the left lower extremity. The leg was markedly edematous and there was an increase in pigmentation. About the foot and ankle were hundreds of nodules ranging in size from that of a pea to that of an olive, most of which were purplish red, pedunculated and ulcerated. On the remaining portion of the leg, extending to the thigh, were several nodules ranging in size from that of a glass pinhead to that of a pea, which were firmly situated in the skin, firm to palpation and purplish red. There was a large, hard adenitis in Scarpa's triangle, and several stony glands were palpable in the right inguinal region. The liver and spleen were not palpable. A roentgenogram of the chest did not show metastasis.

A biopsy specimen was reported as metastatic, melanotic melanoblastoma. The patient was given three doses of roentgenotherapy and was discharged on Nov. 6, 1930.

DISCUSSION

DR. UDO J. WILE: I wish to call attention to the rather unusual localization of this lesion. I think it is an uncommon localization of melanoblastoma. When we first saw the patient I entertained the possibility that her condition might be an unusual form of Kaposi's disease. The lesions had the typical distribution, they occurred on the leg alone and had a good deal of the appearance of the hemorrhagic type of sarcoma. However, the microscopic picture is that of severe malignant melanoma. Still, the patient has lived much longer than I thought she would. It is interesting that while there are metastases, a large mass in the groin, there are not many lesions. They are practically all confined to the site of the leg and thigh. I think that the first lesion occurred between the toes. There is no history of a preexisting mole. I believe the case is perhaps a little unusual, but with a simple enough diagnosis at the moment.

DR. OLIVER S. ORMSBY: A year before the presentation of this patient, Dr. Wile presented two patients with melanotic lesions, with the request that a method of treatment be discussed. Some of the physicians said that they would immediately remove the lesions surgically by wide excision. That is the general view of the treatment in such cases. I said then that all the cases of metastatic involvement that I had seen had occurred following surgical removal. I have watched for twenty or more years many cases in which the patients were not treated, and nothing has occurred. I am not criticizing surgical measures any

more than other methods, but three or four patients a year come to me with metastatic involvement following surgical removal and these cases impress me. I have never seen metastases occur following radium therapy, but it has to be used rather energetically. Radium and roentgenotherapy prevent rather than promote metastases by their effects on the local blood vessels. I think the location of the condition has much to do with the result. If the lesion is on the forearm it is not so threatening, but when on the foot, lid or conjunctiva I think it is extremely dangerous. In these regions lesions frequently metastasize and terminate fatally. I think that if they are in a place where they are not likely to be irritated one should leave them alone. If it is necessary to intervene, radium treatment is effective.

Dr. A. W. Stillians: I am interested in the metastatic aspect of the disorder. I have been watching a patient at the Municipal Tuberculosis Sanitarium who has a small melanoma at the side of the lower lip. Extending toward the corner of the mouth tiny metastases have been present for about two years. They have remained very small, about the size they were when first seen.

Dr. R. H. Stevens: There is a general impression among radiologists that melanomas are rather radioresistant, but I do not think that this is always true. I have had two patients during the last year who were operated on, in whom there was local recurrence of the lesions. We treated these patients with radium, and the local lesions disappeared completely, showing that these recurrences, at least, are sensitive to irradiation. One patient died of general metastases and the other shows no metastases. We have treated a number of other patients with radium, and my experience agrees with Dr. Ormby's. We have not seen any metastases following radium or roentgenotherapy or electrocoagulation. In the cases in which the patient were treated by electrocoagulation we commonly used radium or roentgen rays in combination. I have seen a number of recurrences following surgical removal of melanotic growths, and I think that operation with a cold knife is contraindicated.

Dr. W. H. Guy: The question of recurrence following surgical removal hinges entirely, I think, on whether the lesion was a local growth when first seen. If the growth is entirely removed, the removal could not have anything to do with dissemination of the disease. If there have already been metastases, there might be material improvement in end-results from radiotherapy in preventing further metastases. In such a case there would be no objection to irradiating the area before surgical removal of the growth. In my experience I have seen recurrences or metastases following surgical removal and have seen many cases in which the electrocautery was used with no metastases. Again, I think all of us have seen extensive metastatic involvement in cases in which the patients had not received treatment of any kind. Our method of therapeutic approach should be considered from the standpoint of cosmetic and permanent results. If we do not get an equal number of permanent results with surgical removal and radiotherapy, it would seem rational to select the most successful and to attempt an improvement in our statistical end-results by combined methods of approach.

Dr. Oliver S. Ormsby: My discussion did not disagree at all with that of Dr. Guy. The determination of the extent of the lesion is an unsolvable problem; hence the surgical difficulties. To illustrate: A woman had a lesion in the eyebrow for which I did not suggest any treatment as it was not being irritated nor was it conspicuous. Several weeks later it was removed by a surgeon. A wide and deep excision was done, and a subsequent histologic examination appeared to show that all the growth had been removed. Within fifteen months, however, a general metastatic involvement occurred, followed by a fatal termination. I do not believe that we can determine by inspecting any lesion whether or not it is sufficiently localized to be completely removed surgically. Radium therapy does not apparently cause metastases, while incomplete excision may in occasional instances.

DR. J. H. MITCHELL: I remember that Dr. MacKee made the statement that it is not the width of the excision but the depth of the excision that is of importance. He emphasized that point forcibly.

DR. MAX S. WIEN: We now have under observation a man, aged 52, with melanotic lesions on the left leg, thigh, groin and scrotum. About ten years ago the patient noticed a "corn" on the dorsum of the left second toe to which he applied a corn-plaster. The toe became inflamed and blue, but the condition subsided with hot compresses. No further change was noted until two years ago when the lesion appeared to grow larger and discharge. The patient was examined at the county hospital; some enlarged glands in the left inguinal region were removed for diagnosis and were found to contain no melanotic tumor cells. The toe was amputated, and about six months later bluish lumps began to appear in the left groin and thigh with associated marked lymphedema of the left lower extremity, scrotum and penis. In spite of the facts that the excised inguinal glands revealed no microscopic evidence of metastases, and that there was apparently complete excision of the melanoma with the amputation of the toe, generalized metastases developed within six months.

LICHEN PLANUS ATROPHICUS ET SCLEROSIS. Presented by DR. HORACE W. PORTER, Jackson, Mich. (by invitation).

Mrs. L., O'B., aged 58, presented an eruption of about one year's duration, which began on the hands and feet and had been associated with some pruritus. There were some lesions on the right breast of approximately the same duration.

Examination showed that the eruption was of two types. That on the hands and feet consisted of confluent brownish-red papules, associated with some fissuring and scaling. Over the right breast were several ivory colored papules varying in size from that of a glass pinhead to that of a large pea. The surfaces were obviously atrophic and studded with pinpoint, dark keratotic plugs. The eruption on the hands and feet had responded rapidly to roentgen and mercurial therapy.

Biopsy was not available.

DISCUSSION

DR. LOREN W. SHAFFER: The lesions seemed typical as we saw them on the breast, but the lesions on the hands, I think, would be subject to quite a bit of question in comparison with the lesions occurring on the breast.

DR. UDO J. WILE: I have not seen this patient, but I think that Dr. Porter wished to have her presented for a diagnosis only in regard to the lesions on the breast.

DR. G. H. BELOTE: I saw this patient first with Dr. Porter in the summer of 1930. She then had lesions on the hands and feet which could be lesions of ordinary lichen planus. There were also lesions over the breast which were distinctly atrophic, ivory colored, and with the central dark plugs that have been so often described as lichen planus atrophicus et sclerosis. I think that the lesions on the breast are unquestionably that condition, but whether those on the hands and feet are that disorder or a variant I am not certain.

DR. J. H. MITCHELL: The question that interests me in this case is the possible coexistence of lichen planus atrophicus et sclerosis with lichen planus hypertrophicus in the same person. In the absence of a biopsy this makes a point for interesting discussion. As I remember, Dr. Ormsby's opinion is that lichen atrophicus never follows lichen planus of the ordinary type. Darier and others think that it does. If some of the lesions in the present case are lichen atrophicus, and if the others are lichen planus hypertrophicus, it is the first instance that I have seen of the coexistence of the two types.

DR. CLARK W. FINNERUD: I was impressed with the fact that the keratodermic lesions on the palms are very similar to those on the wrist. I think that we have seen in this case a combination of unusual types of lichen planus in the same person, the type of Hallopeau plus the hypertrophic type on the wrist.

DR. G. H. BELOTE: Is the lesion on the breast the ordinary type of lichen planus atrophicus et sclerosis?

DR. CLARK W. FINNERUD: I believe so.

DR. OLIVER S. ORMSBY: There has been much confusion concerning lichen planus atrophicus et sclerosis and other disorders that it simulates. Several cases presenting white papules had been recorded under various titles, including white spot diseases. In our investigation of several cases we placed them all in two groups, first, lichen planus atrophicus et sclerosis and second, morphea guttata. About three years ago Dr. Wise added chronic atrophic lichenoid dermatitis (Csillaj) to the group, thus making three diseases. Lichen planus atrophicus et sclerosis has no connection with lichen planus. Patients who have the true atrophic form of lichen planus practically never have the ordinary lesions of lichen planus. There is, however, a rare form of ordinary lichen planus in which some of the red papules undergo sclerosis and resemble those of the true atrophic form. The chief difficulty lies in distinguishing lichen planus atrophicus from morphea guttata. The lesions of lichen planus atrophicus begin as white papules; on the surface of each, from one to five or more black keratotic plugs are seen. These horny plugs may fall, leaving small depressions. The papules are often grouped into patches. On involution of the papule, a delicate white atrophic area remains. The black horny plugs are absent in the lesions of morphea guttata, and the lesions have some color, red or brown, at the margins and are not so distinctly papular. I think that the present patient has true lichen planus atrophicus et sclerosis of Hallopeau on the breast. I am not sure of the lesions on the wrist.

A CASE FOR DIAGNOSIS (LUPUS VULGARIS ERYTHEMATOIDES?). Presented by DR. UDO J. WILE.

Mrs. M. S., aged 51, said that an eruption had started on her forehead fifteen years before presentation, following a burn with hot grease in this area. Several years later similar eruptions were noticed on the lower portion of each leg. All of the lesions were pruritic, but the pruritus was most pronounced on the legs. Treatment prior to her admission had consisted of ointments and "electrical treatments," which according to the patient may have been roentgen rays.

Examination in November, 1930, revealed an eruption that was confined to the forehead, legs, and a small area just anterior to the right ear. The eruption on the legs consisted of a plaque twice the size of a silver dollar, the center of which showed atrophy; there were marked telangiectasia and a peripheral pigmentation surrounded by a slightly elevated ring covered with a mica-like scale. On the face, the lesion was nonscaling, brightly erythematous and irregular, extending from the hair line on the left down toward the right eyebrow. Anterior to the right ear the lesion appeared as a brightly erythematous patch which tended to be linear and showed some atrophy. There was no gaping of the follicles in any of the lesions. There was marked telangiectasia over both cheeks. The patient had been under treatment by her home physician with gold sodium thiosulphate.

Biopsy was not performed.

DISCUSSION

DR. E. P. ZEISLER: Two years ago I presented a man with a condition identical with this one. There were two annular lesions on the legs that showed this peculiar ringlike elevated border. We considered a diagnosis of annular sarcoid in that case. I do not know what the condition in the present case is, but I do not think that it is lupus erythematosus.

DR. J. H. MITCHELL: I was interested in the border of that lesion, and it seemed to me that I could find a little apple jelly color. The possibility occurred to me that the condition might be an atypical lupus vulgaris.

DR. O. H. FOERSTER: I thought it was a very superficial lupus of the Leloir type.

DR. OLIVER S. ORMSBY: We have had cases of this kind in which we classified the disorder as a clinically mixed type. Such cases are lupus erythematosus clinically but lupus vulgaris histologically, and were described originally by Leloir as lupus vulgaris erythematoides. That would be how we would class this case. When we showed Professor Jadassohn a similar case he was inclined to place it in the category of sarcoid. That opinion should be recognized.

DR. G. H. BELOTE: The lesion on the forehead has practically disappeared. It looked more like lupus erythematosus than anything else when we first saw the patient. She has been under treatment by her home physician, but we will try to perform a biopsy.

DR. UDO J. WILE: I am entirely in sympathy with the diagnosis suggested, although at first we had no doubt, that the patient had erythematous lupus of the head. It is very interesting that she has made extraordinary improvement with injections of the gold compound. Whether the injections would have been as effective in true tuberculosis as they are in lupus erythematosus I think will hinge on whether we can get a specimen for biopsy from the border of the lesion on the leg. No tuberculin test has been made.

DR. MICHAEL H. EBERT: In view of the fact that the lesion in the present case has some resemblance to annular sarcoid, I think the tuberculin test should be made.

LUPUS MILIARIS DISSEMINATUS FACIEI. Presented by DR. UDO J. WILE.

D. C. McG., aged 27, a teacher, stated that her eruption began one year before presentation, on the forehead and chin. It remained practically asymptomatic, and since October, 1930, had been treated with roentgen rays at weekly intervals and with an ointment locally, under the management of her home physician.

Examination showed that the eruption was confined to the face. It was made up of papules and pustules, and on diascopy a great many of the lesions were shown to be yellowish brown.

A biopsy section was presented, which showed miliary tubercles in the papillary layer of the corium, with a few deeper infiltrations.

DISCUSSION

DR. CLARK W. FINNERUD: This case interested me a great deal because, in the first place, I received the impression, as I am sure many did, that it was one of acne rosacea. With the diascope, as Dr. Wile showed, there is a suggestion of lupus color. On histologic examination, there is a structure between the papillary bodies that suggested tuberculosis, but on careful examination I noticed that the structure which under low power magnification looked like a giant cell was not that. I understand that there are other sections that are more characteristic. It is true that in old lesions of acne — and I suppose it holds true for acne rosacea — there may be such a marked foreign body reaction that the picture closely resembles that of tuberculosis. There were epithelioid cells in this infiltrate.

As to the term lupus miliaris disseminatus faciei, I do not know what is included under that description. Wise described his cases as occurring chiefly in Negroes, the lesions being chiefly of the angles of the mouth and those of the eye and nose. The case shown today, it seems to me, would better be classified under the title given by Tilbury Fox, or still better as acne telangiectodes of Kaposi, in case the condition is tuberculosis of the skin and not acne rosacea. My impression is that it is acne rosacea.

DR. ROBERT E. BARNEY: I agree with Dr. Finnerud that clinically the eruption resembles acne rosacea. Last year, I believe, Dr. Wile showed a case that was a counterpart of this, and at the last meeting of the Four Cities Dermatological Society, in Pittsburgh, another case was presented. I think, however, that this case lacks the inflammatory character and telangiectasia that one would expect if it were a case of acne rosacea.

DR. R. C. JAMIESON: I wish to draw attention to the fact that occasionally in these days of medicated food we find an eruption closely resembling this in women who have used iodized salt for some time.

DR. KARL G. ZWICK: I agree with Dr. Jamieson as to the influence of iodine, but I take this opportunity to draw your attention to the possibility that other halogens may, in a given case, play a contributory etiologic rôle in the development of cutaneous lesions of an acneform type. For instance, during the past year, the long continued drouth resulted in a high concentration of the contaminations and bacterial content of the water supply, which, in turn, necessitated at times a more intensive chlorination than usual. In the case of the Ohio river, the phenols, derived from the coke ovens, or rather the chlorphenols produced by the chlorination, may be an additional acnegenic factor. Whether these or other chlorine compounds or the free chlorine itself are responsible and whether they act as follicular irritants locally or after ingestion is an open question.

DR. LOREN W. SHAFFER: I think that the differentiation between acne rosacea and lupus is a very important question. It has gotten so that I am almost afraid to make a diagnosis of acne rosacea, particularly in regard to the foreign body type of reaction that may occur in acne rosacea papules. I think it would be worth our effort to try to determine more of the histologic differential points, between lupus and acne rosacea, particularly the histologic picture of acne rosacea. It is important when a patient comes in that we should make such a differentiation, for the treatment is entirely different. The ordinary treatment for acne rosacea often is not satisfactory.

DR. UDO J. WILE: This is perhaps the sixth case we have seen in which a diagnosis of acne rosacea might have been entertained on casual inspection, in which I think in every case we were dealing with a true tuberculosis. I have learned from talking with others that they also have seen cases of this type. There is no similarity of the pathologic architecture of these cases with that seen in rosacea. There is no inflammation, no increase in sebaceous glands, in fact, not the picture presented in rosacea at all. In all the cases we have had — and two of them I think you saw — there could be no question because of the apple jelly color under the diascope. In the case we presented two years ago and in the one last year the yellow nodules made a simple diagnosis of what appeared to be difficult at the onset. The present case, I think, is more difficult. In all the cases the tuberculous reaction was the simplest that I have ever seen, a sort of very early, solitary lupus nodule. I do not think we are justified in saying the condition is tuberculosis on the basis of the architecture alone. We should have to demonstrate that there are bacilli present before we could definitely say this. In two cases, one of them that I presented last year, I think we did determine a coincident tuberculosis. Cases of this kind lack the telangiectasic features of the rosacea and the condition appears as explosive lesions within a short time. I think they are cases of tuberculosis and agree that the terminology may be incorrect, but until we determine by bacterial findings that that is the case we must make the diagnosis on the tuberculosis architecture. I think these are cases of miliary tuberculosis closely resembling rosacea.

A CASE FOR DIAGNOSIS (ARSENICAL KERATODERMA?). Presented by DR. UDO J. WILE.

R. C., aged 32, a farmer, was first seen in September, 1930, in the department of neurology, with a diagnosis of multiple neuritis and involuting herpes zoster. Examination in the dermatologic department at that time confirmed this opinion, and no other eruption was noted. The patient complained of weakness and pain in both lower extremities. He had never used alcohol, and examination of the hair and urine for arsenic gave negative results. The cause of the neuritis was unexplained. He remained in the hospital until November 16, under treatment for multiple neuritis and for pneumonia, which developed during his stay.

He returned on Dec. 11, 1930, and at that time marked redness of the palms and soles was noted. The soles showed little of significance aside from the redness, but the hands showed marked palmar hyperkeratosis, scaling and fissuring. The palmar involvement was sharply demarcated from the dorsum, except in the case of the distal phalanges, which showed the same redness and scaling.

Microscopic examination and cultures had not revealed mycelia. Biopsy was not available.

DISCUSSION

DR. R. C. JAMIESON: The fact that the patient had herpes zoster and polyneuritis followed by erythema of the palms and soles only I think might possibly put this case into the class of nutritional disturbances that would approximate the pellagrous type of lesions. I have never seen a case of beriberi or polyneuritis, but the thought occurred to me that on account of the polyneuritis and the skin disturbances following it, there might be a remote infection of some sort.

DR. HOWARD J. PARKHURST: In view of the involvement of the scalp I think we should have to consider the possibility of early pityriasis rubra pilaris.

DR. MICHAEL H. EBERT: I think this case is interesting in connection with the acute epidemic of arsenical eruptions in England many years ago, following poisoning with beer, in which polyneuritis was present with lesions on the palms and soles similar to those present in this case.

DR. OLIVER S. ORMSBY: I have seen acute erythematous eruptions like this occur on the palms during the treatment of syphilitic patients with arsenic, and have also seen them occur without treatment with arsenic. I have likewise seen the development of an acute keratoderma, preceded by or associated with erythema. Over the dorsal surface of the fingers this is quite characteristic. Patients with this type of condition respond readily to treatment. I think that the present patient has an acute keratoderma induced by some severe intoxication, probably arsenical.

DR. UDO J. WILE: I am entirely in accord with the diagnosis suggested, and it was the one I suggested to our staff. The patient gives a history of contact with arsenate of lead in the form of a spray for fruit trees, but he has not used this for some time. We did not, unfortunately, find arsenic in the examination of the hair.

Book Reviews

HANDBUCH DER HAUT- UND GESCHLECHTSKRANKHEITEN. Edited by PROF. J. JADASSOHN. Volume 18. Price, 136 marks. Pp. 1035, with 43 illustrations, many in color. Berlin: Julius Springer, 1928.

This is another of the complete treatises in this monumental encyclopedia on skin and venereal diseases. This volume, consisting of 1,035 pages, is devoted to the therapy for syphilis. The reviewer knows of no other treatise on this one aspect of syphilis that compares with it in extent and thoroughness; no feature of the subject has been neglected. A glance at the table of contents gives some intimation of the completeness of the work.

Mercury, Theoretical, Chemical and Experimental Consideration, 90 pages, by Dr. Svend Lomholt, Copenhagen.

Mercury Therapy, 73 pages, by Dr. Oscar Rosenthal, Berlin.

Damages Done by Mercury, 55 pages, by Dr. Johan Almkvist, Stockholm.

Bismuth, Theoretical, Chemical and Experimental Consideration, 96 pages, by Dr. Svend Lomholt, Copenhagen.

Bismuth Treatment, 113 pages, by Dr. Hugo Muller, Maina.

Effects of Bismuth on Kidneys, 58 pages, by Dr. Fritz Juliusberg, Braunschweig.

Arsphenamine, Chemical and Experimental Consideration, 73 pages, by Dr. W. Wise, Hamburg.

Arsphenamine Therapy, 31 pages, by Dr. Paul Linser, Tübingen.

Damages from Arsphenamine, 113 pages, by Dr. Wilhelm Kerl, Vienna.

Iodides and Iodide Salts, Experimental and Pharmacologic Consideration, 21 pages, by Dr. Julius Pohl, Hamburg.

Treatment with Iodides, 50 pages, by Dr. Wilhelm Heuck, Munich.

Other Remedies in Syphilis Therapy, Experimental and Clinical Consideration, 45 pages, by Dr. Alfred Perutz, Vienna.

Physical Methods in the Treatment for Syphilis, 38 pages, by Dr. Carl Albin Hoffman, Berlin.

General Treatment and Abortive Treatment for Syphilis, 74 pages, by Dr. Johan Werther, Dresden.

Personal Prophylaxis of Syphilis, 40 pages, by Dr. Paul Manteufel, Düsseldorf, and Dr. Werner Worms, Berlin.

These chapters are followed by an extensive bibliography and by personal and general indexes. The book is a veritable mine of knowledge of syphilitic therapy.

FOOD ALLERGY, ITS MANIFESTATIONS, DIAGNOSIS AND TREATMENT, WITH A GENERAL DISCUSSION OF BRONCHIAL ASTHMA. By DR. ALBERT H. ROWE. Price, $5. Pp. 442. Philadelphia: Lea & Febiger, 1931.

In this work Rowe presents a valuable treatise on a new and important subject. His first chapter is devoted to the general considerations of the fundamental facts of allergy. They are brought out in an interesting and suggestive way, but the reviewer feels that this subject might have been more fully developed; it is essential for a satisfactory understanding of the clinical applications of the subject. Next, a chapter is devoted to the diagnosis of food allergy; then, one to the treatment by elimination diets and general measures. The remainder of the book, except the sixteenth chapter, which is devoted to a summary of the literature, is given to a clinical consideration of the subject. These chapters are complete, practical and extremely suggestive and should be useful to clinicians in general.

It is interesting and entirely in accord with the reviewer's experience that the author finds elimination diets much more practical and satisfactory in the diagnosis

of food allergies than skin tests. He emphasizes the importance of the elimination diets that he has developed in the diagnosis of food allergy, and he goes into detail in describing them and their methods of use. This is perhaps the most valuable part of the book; this is not said in disparagement of any other part.

The chapter devoted to the manifestations of allergy in cutaneous diseases is satisfactory, much more so than chapters in general works are as a rule to dermatologists. His views on the allergic manifestations in cutaneous diseases are in accord with those of dermatologists. The work as a whole will be of interest to dermatologists.

PRACTICAL METHODS IN THE DIAGNOSIS AND TREATMENT OF VENEREAL DISEASES, FOR MEDICAL PRACTITIONERS AND STUDENTS. By DAVID LEES, Surgeon in Charge of Venereal Diseases, The Royal Infirmary, Edinburgh. Price, $5. Pp. 634. New York: William Wood & Company.

Of the 600 pages of text in this book, we are interested in the 313 devoted to syphilis. The author has had an immense amount of experience in the management of syphilis, and the book is in the manner of the English clinician who knows all about the clinical manifestations of diseases and considers them from that standpoint. Not that the laboratory side of syphilis is neglected, for it is given in adequate detail; but the book is distinctly a clinical work on syphilis, and, as such, is to be commended, particularly in these days when one is inclined to forget that all of the facts of syphilis are not to be ascertained by the dark field and the test tube. Syphilis is not an abstraction to Lees; it is a human disease that is to be handled as a human problem; that is really the business of the practitioner. The book is up to date and gives all of the newer knowledge. The illustrations are rather numerous but for the most part are not very informative.

L'UNIFICATION DE LA TERMINOLOGIE MÉDICALE. By PIERRE J. RONDOPOPOULOS. Syra: A. Scordilis, 1931.

The author discusses the present-day medical terminology, with special reference to the origin of the terms used. He finds that of a total of 6,420 medical terms, 4,299 are Greek and 2,121 Latin. Of the 413 terms used in dermatosyphilology, 227 are Greek and 186 Latin. He also calls attention to the fact that some compound words derived partly from the Greek and partly from Latin, have been used. Since most of the terms have originated from the Greek, he suggests that all terms be revised according to an all-Greek terminology. For instance, he suggests the use of the Greek word "alphos" instead of the Latin word "vitiligo." The terms syphilography and syphilology would become syphilidography and syphilidology. The term "aurotherapy," which is derived from the Latin "aurum" and the Greek "therapy," would become "chrysotherapy." Instead of the term "fixation of complement" he suggests "alexinofixation." The word "spirochaete" should be spelled "speirochaete." The reasons for the various changes are given along with the Greek words from which they have been derived.

Directory of Dermatologic Societies *

NATIONAL DERMATOLOGIC SOCIETIES

American Medical Association, Scientific Assembly, Section on Dermatology and Syphilology

George Miller MacKee, Chairman, 200 W. 59th St., New York.
Francis E. Senear, Secretary, 55 E. Washington St., Chicago.
Place: New Orleans. Time: 1932.

American Dermatological Association

W. H. Mook, President, 3720 Washington Blvd., St. Louis.
W. H. Guy, Secretary, 7026 Jenkins Arcade, Pittsburgh.

British Association of Dermatology and Syphilology (Canadian Branch)

Philip Burnett, President, 2 Simpson St., Montreal.
L. P. Ereaux, Secretary, 1380 Sherbrooke West, Montreal.
Place: Toronto. Time: 1932.

SECTIONAL DERMATOLOGIC SOCIETIES

Baltimore and Washington Dermatological Society

Isaac R. Pels, President, 1010 St. Paul St., Baltimore.
H. Hanford Hopkins, Secretary, Johns Hopkins Hospital, Baltimore.

Iowa and Western Illinois Dermatological Association

J. C. Kessler, President, University Hospital, Iowa City.
J. W. Bailey, Secretary, 10th St. and Grand Ave., Des Moines, Iowa.

New England Dermatological Society

Arthur M. Greenwood, President, 416 Marlboro St., Boston.
William P. Boardman, Secretary, 388 Marlboro St., Boston.
Place: Boston. Time: April 13, 1932.

Southern Medical Association, Section on Dermatology

Clifton Brooks Willmott, Chairman, 608 S. 4th Ave., Louisville, Ky.
Emmet R. Hall, Secretary, 1001 Exchange Bldg., Memphis, Tenn.

STATE DERMATOLOGIC SOCIETIES

Louisiana Dermatological Society

R. A. Oriol, President, 921 Canal St., New Orleans.
M. T. Van Studdiford, Secretary-Treasurer, 150 Baronne St., New Orleans.

Medical Society of the State of New York, Section on Dermatology and Syphilology

Edward R. Maloney, Chairman, 853 7th Ave., New York.
George C. Andrews, Secretary, 115 E. 61st St., New York.

* Secretaries of dermatologic societies are requested to furnish the information necessary for the editor to make this list complete and to keep it up to date.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA
SECTION ON DERMATOLOGY

Sigmund S. Greenbaum, President, 1714 Pine St., Philadelphia.
Stanley Crawford, Secretary, 200, 9th St., Pittsburgh.

MICHIGAN STATE MEDICAL SOCIETY, SECTION ON DERMATOLOGY AND SYPHILOLOGY

Cyril K. Valade, Chairman, 1604 Eaton Tower, Detroit.
George H. Belote, Secretary, University Hospital, Ann Arbor.

MINNESOTA DERMATOLOGICAL SOCIETY

C. A. Boreen, President, 920 Medical Arts Bldg., Minneapolis.
D. D. Turnacliff, Secretary, Yeates Bldg., Minneapolis.

OKLAHOMA DERMATOLOGICAL ASSOCIATION

James Stevenson, President, 108 W. 6th St., Tulsa.
W. A. Showman, Secretary, 108 W. 6th St., Tulsa.

LOCAL DERMATOLOGIC SOCIETIES

ATLANTA DERMATOLOGICAL SOCIETY

Francis G. Jones, President, 384 Peachtree St., Atlanta, Ga.
Charles A. Wilkins, Secretary, Medical Arts Bldg., Atlanta, Ga.

BRONX DERMATOLOGICAL SOCIETY

Henry Silver, Chairman, 290 West End Ave., New York.
Theodore Rosenthal, Secretary-Treasurer, 115 W. 86th St., New York.

BROOKLYN DERMATOLOGICAL SOCIETY

Abraham Walzer, President, 217 Clifton St., Brooklyn.
A. M. Persky, Secretary, 1750 Ocean Pkwy., Brooklyn.

CHICAGO DERMATOLOGICAL SOCIETY

Henry E. Michelson, President, 80 S. 7th St., Minneapolis.
E. A. Oliver, Secretary, 55 E. Washington St., Chicago.

CINCINNATI DERMATOLOGICAL SOCIETY

H. Jerry Lavender, President, 716 Provident Bank Bldg., Cincinnati.
L. E. Valker, Secretary-Treasurer, 916 Provident Bank Bldg., Cincinnati.

CLEVELAND DERMATOLOGICAL SOCIETY

Howard J. Parkhurst, President, 316 Michigan St., Toledo.
Robert E. Barney, Secretary, 1021 Prospect Ave., Cleveland.

DETROIT DERMATOLOGICAL SOCIETY

Claud W. Behn, President, 1546 David Whitney Bldg., Detroit.
William G. Saunders, Secretary-Treasurer, 9203 Grand River Ave., Detroit.
Place: Cleveland. Time: Nov. 19, 1931.

LOS ANGELES DERMATOLOGICAL SOCIETY

Irving R. Bancroft, Chairman, 412 W. 6th St., Los Angeles.
Chris R. Halloran, Secretary, 1052 W. 6th St., Los Angeles.

Manhattan Dermatologic Society

George Miller MacKee, Chairman, 200 W. 59th St., New York.
Mihran B. Parounagian, Secretary, 126 E. 39th St., New York.

Montreal Dermatological Society

Philip Burnett, President, 2 Simpson St., Montreal.
Lemuel P. Ereaux, Secretary-Treasurer, 1390 Sherbrooke St., West, Montreal.

New York Academy of Medicine, Section of Dermatology and Syphilis

Joseph J. Eller, Chairman, 100 W. 59th St., New York.
Leo Spiegel, Secretary, 241 W. 100th St., New York.

New York Dermatological Society

John Frank Fraser, President, 100 W. 59th St., New York.
Edward R. Maloney, Secretary, 853 7th Ave., New York.

Philadelphia Dermatological Society

Carroll S. Wright, President, 1402 Spruce St., Philadelphia.
Jacques P. Guequierre, Secretary, 1930 Chestnut St., Philadelphia.

Pittsburgh Dermatological Society

J. H. Fiscus, Chairman, 121 N. Main St., Greensburg, Pa.
Claude B. Norris, Secretary, 244 Lincoln Ave., Youngstown, Ohio.
Place: Pittsburgh. Time: Spring, 1932.

St. Louis Dermatological Society

Richard S. Weiss, President, 3720 Washington Blvd., St. Louis.
M. F. Engman, Jr., Secretary-Treasurer, 3720 Washington Blvd., St. Louis.

San Francisco Dermatological Society

Howard Morrow, President, 384 Post St., San Francisco.
John M. Graves, Secretary, 909 Hyde St., San Francisco.

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